USDA United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with United States Department of Agriculture, Forest Service; United States Department of the Interior, Bureau of Land Management and Bureau of Indian Affairs; United States Department of the Air Force; United States Department of the Army; and Utah Agricultural Experiment Station

Soil Survey of Tooele Area, Utah

Tooele County and Parts of Box Elder, Davis, and Juab Counties, Utah, and Parts of White Pine and Elko Counties, Nevada

How To Use This Soil Survey

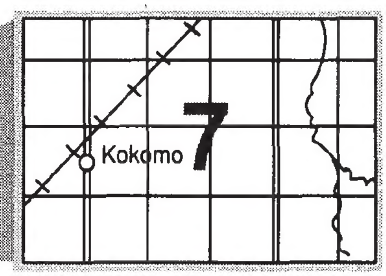
General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

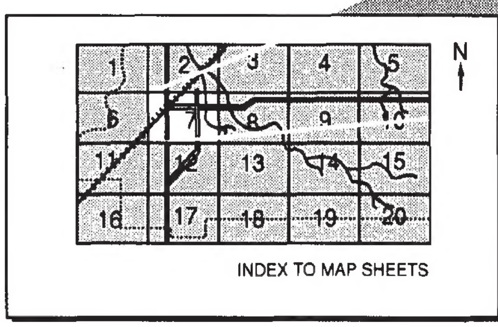
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

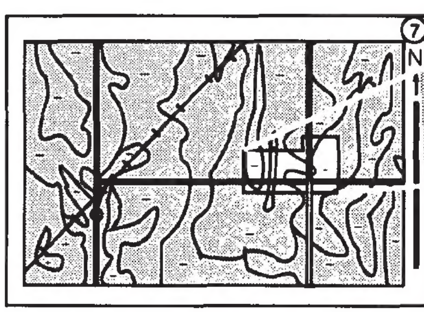


MAP SHEET

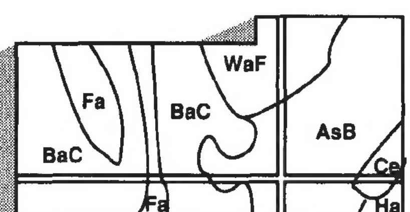
To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



MAP SHEET



AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1987. Soil names and descriptions were approved in 1992. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1992. This survey was made cooperatively by the Natural Resources Conservation Service, the Forest Service, the Bureau of Land Management, the Bureau of Indian Affairs, the Department of the Air Force, the Department of the Army, and the Utah Agricultural Experiment Station. It is part of the technical assistance furnished to the Grantsville and Shambip Soil Conservation Districts.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: The Tooele Valley and the city of Tooele below the Settlement Reservoir. Most of the farmland consists of areas of Lakewin, Erda, and Birdow soils. These soils are used mainly for irrigated alfalfa, barley, and pasture or for nonirrigated winter wheat.

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Issued 2000

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Summary of Tables

Foreword

This soil survey contains information that can be used in land-planning programs in the survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Phillip J. Nelson
State Conservationist
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Soil Survey of Tooele Area, Utah

Fieldwork by Darryl L. Trickler, Darrell T. Hall, Carol D. Franks, Scott K. Ferguson, Ludene B. Campbell, Patrick J. Savage, and James E. Brewer, Natural Resources Conservation Service, and Paul Winkelaar, Forest Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the United States Department of Agriculture, Forest Service; the United States Department of the Interior, Bureau of Land Management and Bureau of Indian Affairs; the Department of the Air Force; the Department of the Army; and the Utah Agricultural Experiment Station

General Nature of the Survey Area

The survey area is mainly in northwestern Utah (fig. 1). It consists of Tooele County, Utah; the portion of the Goshute Indian Reservation in Juab County, Utah, and White Pine County, Nevada; and the portion of the military land in Box Elder County, Utah, and Elko County, Nevada. It also includes Antelope Island in Davis County, Utah. The survey area is bordered on the north by Box Elder County, on the east by Salt Lake County and Utah County, to the south by Juab County, and to the west by Elko County and White Pine County in Nevada.

The survey area has about 4,781,157 acres of land and 528,697 acres of water, most of which is the Great Salt Lake. The lowest elevation in the county fluctuates around 4,200 feet at the surface level of the Great Salt Lake. The highest elevations are 10,589 feet at Lowe Peak in the Oquirrh Mountains; 10,748 feet at Rocky Peak in the Deep Creek Mountains; and 11,031 feet at Deseret Peak in the Stansbury Mountains.

The survey area is used mainly for rangeland, cropland, wildlife habitat, military training and testing sites, mining, or small urban areas. The major cities are Tooele, Grantsville, and Wendover.

Mountain ranges in the survey area run north and south. Precipitation is higher in the mountains than in the valleys, and thus the types and production of vegetation are different. The drier areas are unsuitable for rangeland seeding. Management of the native plants is required for rangeland production in these areas.

History

The settlement of Tooele County began in 1849 by Mormon pioneers. The Goshute, Paiute, and Shoshone Indians were the major tribes in the area at that time. Good pasture was available for the cattle that were raised for local consumption.

In 1869, the advent of the railroad in the area made eastern markets available for products from the west. The largest demand in the east was for wool and mutton. Consequently, sheep herds were built up in the survey area. During the peak years from 1905 to 1925, about 225,000 head of sheep trailed across the Tooele Valley each spring and fall.

In 1934, the Tooele Valley was known as "Utah's Dust Bowl." From that time on, the area has been under a "controlled grazing system." The area has been reseeded, and brush-control measures have been applied.

Land Use

Nearly 1,745,000 acres of the survey area is administered by the Bureau of Land Management. Grazing of domestic livestock is the main land use on this acreage.

The Department of Defense controls 1,738,000

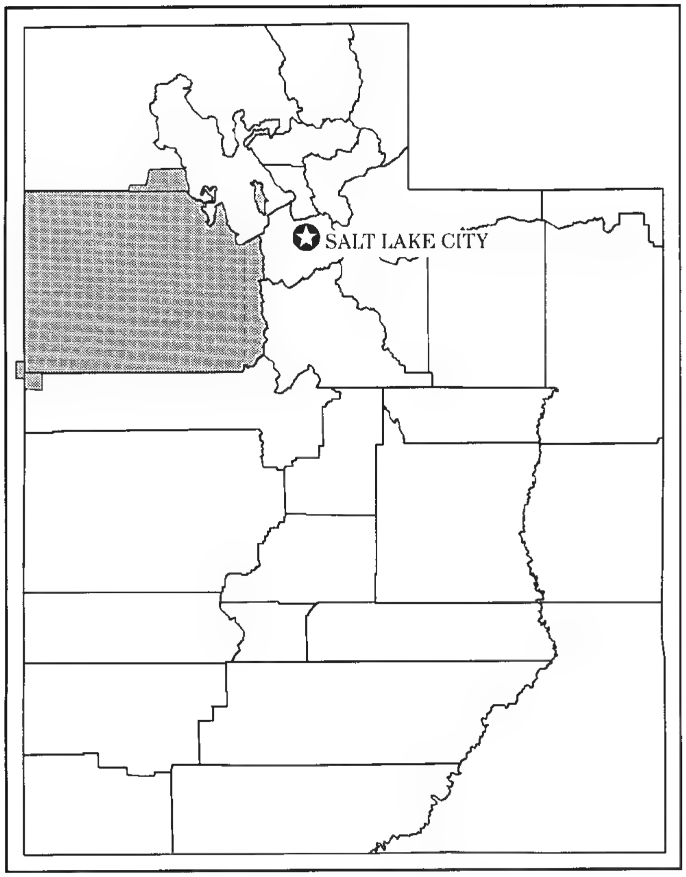

Figure 1.—Location of the survey area.

acres, most of which is a bombing range. This area is principally salt flats and has only minimum value for grazing. Wild horses and other species of wildlife are the only animals on most of the military land.

The Forest Service manages about 153,000 acres in the survey area. These lands are in parts of the Stansbury and Sheeprock mountain ranges. These areas receive the heaviest winter snowpack, which is the major source of culinary, industrial, and irrigation water. Also, these areas are some of the most productive native rangelands.

About 1,000,000 acres in the survey area is privately owned or State owned. All of the crops are produced on privately owned, nonirrigated or irrigated lands. Nearly 633,000 acres of non-Federal land is used as rangeland. About 26,000 acres is used for irrigated alfalfa, small grain, and corn silage; 10,000 acres is used for irrigated pasture; and 7,000 acres is used for nonirrigated small grain and alfalfa.

Water Supply

During periods of high runoff, Deep Creek, Government Creek, and other drainageways enter the west desert mud flats. The Skull Valley and Tooele Valley drainageways empty into the Great Salt Lake. Vernon Creek and other drainageways empty into Rush Lake.

The Settlement Canyon, Grantsville, and Vernon Creek Reservoirs provide irrigation water. Farmers in many areas use water from wells and springs for their irrigation systems. Culinary water also is supplied by springs and wells.

More reservoirs could be developed in the survey area. Ground water is also available.

Industry

Mining has been the major industry since the 1850's. Millions of dollars' worth of precious metals were mined from Ophir, Mercur Barren, and Gold Hill mines, all of which are now ghost towns. Mining has been resumed at the Mercur mine.

Mining has produced more income than any other resource in the area. Gold, silver, lead, and zinc mines were once rich and active in the Oquirrh Mountains. Other important mineral developments were in the Sheeprock, Dugway, Fish Springs, and Deep Creek Mountains. The mountains at Gold Hill also produced much metal ore at one time.

Nonmetallic mining and recovery have been important industries for decades. Lime and calcite are obtained from the northern end of the Stansbury Mountain range. Large quantities of aragonite are produced on the northern part of Cedar Mountain. Salt and potassium have long been available from brines in the salt desert between Cedar Mountain and Wendover. Mud flats between Burmester and Lakepoint are an important source of salt, potassium, and magnesium. The Bonneville Salt Flats cover 150 square miles and are a good source of brine for these minerals.

Physiography and Geology

The survey area is in the Great Basin section of the Basin and Range physiographic province. This province is characterized by uplifted block faulted mountain ranges and down-dropped faulted basin valleys. The mountain ranges in the area are composed primarily of Paleozoic-age sedimentary rocks of marine origin and small exposures of volcanic and intrusive Tertiary igneous rocks. Exceptions are the ranges that form Antelope Island in the Great Salt Lake (in the northeast

corner of the survey area) and Granite, Simpson, and Sheeprock Mountains (in the south-central part of the survey area). These ranges are composed mainly of Precambrian-age metamorphic and igneous rocks.

The basin valleys are filled with thick wedges of sediment derived from long-term erosion of the uplifted mountain ranges. These sediments consist of alluvial, colluvial, lacustrine, and volcanic materials of Tertiary and Quaternary age that were deposited as interfingering sediments, thus making correlation of the deposits difficult. The alluvial and colluvial deposits generally occurred as an alluvial slope of coalescing fans consisting of medium grained to coarse grained sediment from the main mountain masses to the valley floors. The valley floors developed in the form of old lakebed deposits from Lake Bonneville and poorly developed alluvial flood plains. The lakebed deposits consist mainly of clay and silt and some sand and gravel. Flood-plain deposits include a more evenly distributed range of sediment sizes of clay, silt, and sand and some gravel. Much of the survey area is in the Great Salt Lake Desert and includes the shoreline of prehistoric Lake Bonneville. Thus, playa deposits of saline evaporites and mud flats and eolian sediments or dune deposits are included in the valley sediments. Dune deposits made up almost entirely of dolomite and gypsum crystals are south of Knolls in the central part of the survey area.

The Basin and Range province has been undergoing active tectonic uplift since the middle Miocene age (approximately 10 million years ago). The faults are generally located at the base of the ranges and are considered to be active in a geologic sense. The return period for actual earthquake events is between 450 and 5,000 years for these faults. No major earthquakes have occurred in the survey area since the time of settlement. This active geologic process, however, has been responsible for the uplifting of the mountains in the region and the consequent ongoing building of active alluvial fans.

The survey area is characterized by the active and recently active geologic processes of block faulting and uplift, volcanism, igneous intrusion, erosion, sedimentation, and deposition.

Climate

Summers are warm or hot in most valleys and much cooler in the mountains. Winters are cold in the mountains. Valleys are colder than the lower slopes of adjacent mountains because of cold air drainage. Precipitation occurs in the mountains throughout the year, and a deep snowpack accumulates during the winter. Snowmelt supplies water for agriculture in the area. In the valleys, precipitation in summer occurs as showers; some thunderstorms also occur. In winter the ground is covered with snow much of the time. Warm, dry Chinook winds, which blow downslope, often cause the snow to melt and evaporate.

Table 1 gives data on temperature and precipitation at Dugway, Ibapah, and Tooele for the period from 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between

the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

General Soil Map Units

The general soil map that accompanies this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The soils or miscellaneous areas making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils or miscellaneous areas can be identified on the map. Likewise, areas that are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The general soil map units in this soil survey have been grouped for purposes of broad interpretations. Each of the broad groups of soils and the map units in each group are described on the following pages.

Map Unit Descriptions

Very Deep, Poorly Drained and Somewhat Poorly Drained, Nearly Level Soils, Playas, and Salt Flats; on Lake Plains, Flood Plains, Low Lake Terraces, and Stream Terraces

These map units make up about 38 percent of the survey area. The native vegetation is shrubs and grasses. The Playas and the Salt flats are mostly barren of vegetation.

These areas are used mainly for military training sites, solar evaporation ponds, rangeland, or wildlife habitat.

1. Playas-Saltair-Salt Flats

Playas, salt flats, and poorly drained soils on lake plains in a desert climatic regime

This map unit is in the Great Salt Lake Desert. Slopes are 0 to 1 percent. The Playas and the Salt flats are barren of vegetation. The native vegetation on the Saltair soils is mainly pickleweed and saltgrass. Elevation ranges from 4,200 to 4,300 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This map unit makes up about 37 percent of the survey area. It is about 76 percent Playas, 15 percent Saltair soils, 7 percent Salt flats, and 2 percent soils of minor extent (fig. 2).

The surface of the Playas is smooth. It is commonly thinly covered by salt crystals and is patterned by cracks when dry. The soil materials are strongly calcareous, stratified lake sediments of silt, clay, and sand. They contain sufficient amounts of salts to prohibit the growth of plants.

Saltair soils formed in alluvium and lake sediments derived from mixed rock sources. Typically, the surface layer is very pale brown silt loam. The subsoil to a depth of 60 inches is white silt loam or silty clay loam.

Salt flats are barren, undrained basins. The surface is covered with a thick layer of salt.

Of minor extent are Skumpah, Dynal, Kanosh, Yenrab, Logan, and Tooele soils.

This unit is used mainly as military training and testing areas or as wildlife habitat. The Salt flats and Playas are used as sources of salt from solar evaporating ponds.

2. Kanosh-Bramwell-Logan

Somewhat poorly drained and poorly drained soils on flood plains, low lake terraces, and stream terraces in a semidesert climatic regime

This map unit is in the eastern and southwestern parts of the survey area. Slopes range from 0

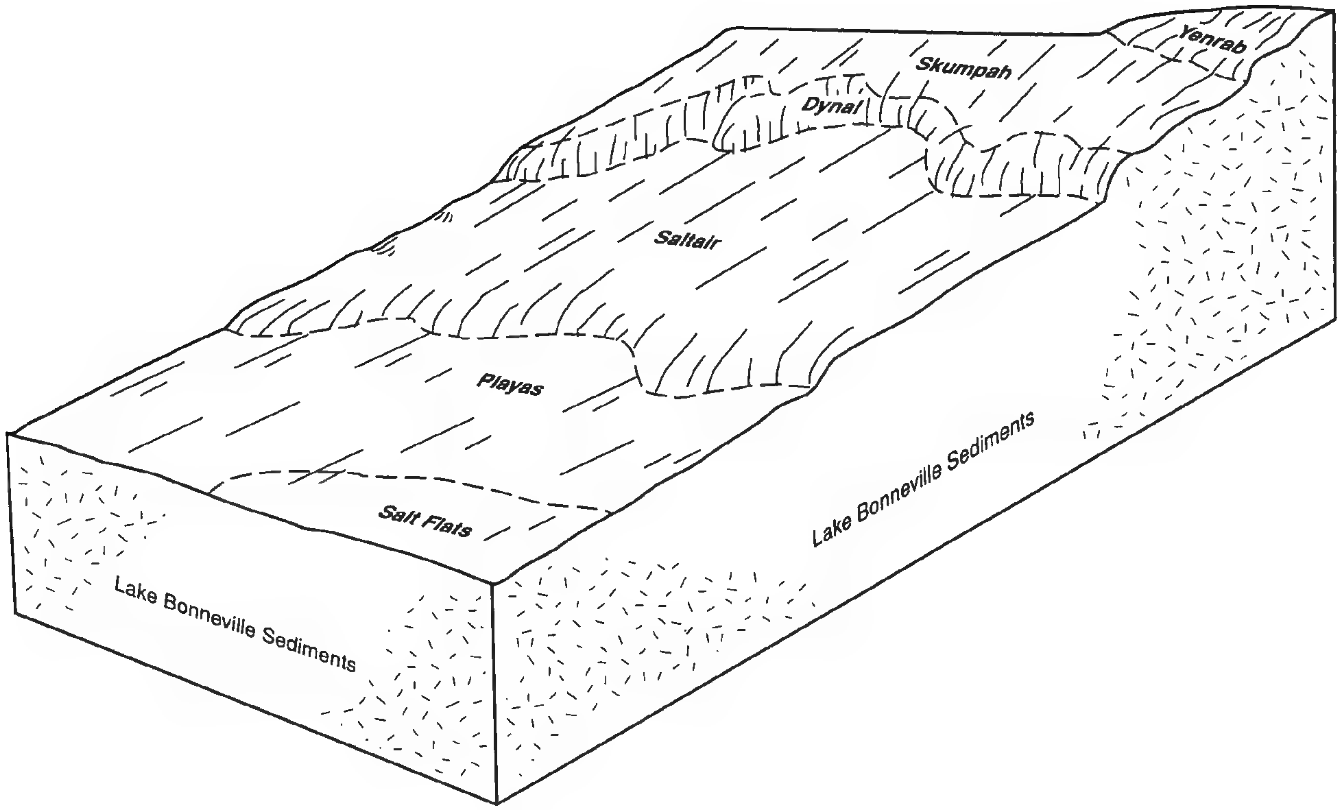

Figure 2.—Typical pattern of soils and parent material in the Playas-Saltair-Salt flats and Skumpah-Yenrab-Dynal general soil map units.

to 2 percent. The native vegetation is mainly saltgrass, sedges, and greasewood. Elevation ranges from 4,200 to 5,500 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 46 to 54 degrees F, and the average frost-free period is 110 to 180 days.

This unit makes up about 1 percent of the survey area. It is about 36 percent Kanosh soils, 21 percent Bramwell soils, 20 percent Logan soils, and 23 percent components of minor extent.

Kanosh soils are somewhat poorly drained and are on low lake terraces. Slopes range from 0 to 2 percent. The soils formed in lacustrine sediments derived from mixed rock sources. Typically, the surface layer is light brownish gray loam. The subsoil to a depth of 60 inches or more is very pale brown to white loam and fine sandy loam.

Bramwell soils are somewhat poorly drained and are on low lake terraces and stream terraces. Slopes range from 0 to 2 percent. The soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is light brownish gray silt loam. The subsoil is light brownish gray and light gray silt loam and silty clay loam. The substratum to a depth of 60 inches or more is light gray silty clay loam.

Logan soils are poorly drained and are on flood plains. Slopes are 0 to 1 percent. The soils formed in alluvium derived from mixed rock sources. Typically, the surface layer is dark grayish brown to dark gray silt loam. The subsoil to a depth of 60 inches or more is gray to white silty clay loam.

Of minor extent are Skumpah, Saltair, Yenrab, Birdow, and Taylorsflat soils and Playas.

This unit is used mainly for irrigated alfalfa, small grain, pasture, or meadow hay or as rangeland or wildlife habitat. Controlling grazing is necessary to maintain forage production. The unit is poorly suited to nonirrigated crops because of salt and alkali and because of low precipitation. The Kanosh and Bramwell soils are suited to irrigated crops. Drainage and the leaching of salts and alkali improve crop production. The Logan soils are suited to wet meadow hay.

Shallow and Very Deep, Well Drained and Somewhat Excessively Drained, Nearly Level to Moderately Steep Soils; On Lake Terraces, Fan Terraces, and Stabilized Sand Dunes

These map units make up about 41 percent of the survey area. The native vegetation is shrubs, grasses, and some juniper trees.

These areas are used mainly as rangeland, wildlife habitat, or irrigated cropland.

3. Skumpah-Yenrab-Dynal

Very deep, well drained and somewhat excessively drained, nearly level to moderately sloping soils on lake terraces and stabilized sand dunes in a desert climatic regime

This map unit is in the central part of the survey area. Slopes range from 0 to 15 percent. The native vegetation is mainly shadscale, greasewood, bottlebrush squirreltail, Indian ricegrass, and fourwing saltbush. Elevation ranges from 4,200 to 5,050 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit makes up about 11 percent of the survey area. It is about 61 percent Skumpah soils, 12 percent Yenrab soils, 11 percent Dynal soils, and 16 percent components of minor extent (fig. 2).

Skumpah soils are well drained and are on low lake terraces. Slopes range from 0 to 2 percent. The soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is light gray silt loam. The subsoil is light yellowish brown and pale brown silty clay loam and silt loam. The substratum to a depth of 60 inches or more is pale brown, light gray, or white silty clay loam and silt loam.

Yenrab soils are somewhat excessively drained and are on stabilized sand dunes. Slopes range from 2 to 15 percent. The soils formed in sand derived from mixed rock sources. Typically, the surface layer is pale brown fine sand. The underlying material to a depth of 60 inches or more is light yellowish brown fine sand.

Dynal soils are somewhat excessively drained and are on stabilized sand dunes. Slopes range from 2 to 15 percent. The soils formed in oolitic eolian sand derived dominantly from lacustrine sediments. Typically, the surface layer is very pale brown sand. The underlying material to a depth of 60 inches or more is very pale brown and light gray sand.

Of minor extent are Tooele, Timpie, and Saltair soils, Playas, and Dune land.

This unit is used mainly as rangeland or wildlife habitat. Controlling grazing is necessary to maintain forage production.

4. Tooele-Cliffdown-Timpie

Very deep, well drained and somewhat excessively drained, nearly level to moderately sloping soils on lake terraces and fan terraces in a desert climatic regime

This map unit is in the central part of the survey area. Slopes range from 0 to 15 percent. The native vegetation is mainly shadscale, greasewood, Indian ricegrass, horsebrush, and bottlebrush squirreltail. Elevation ranges from 4,200 to 6,000 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit makes up about 15 percent of the survey area. It is about 35 percent Tooele soils, 27 percent Cliffdown soils, 23 percent Timpie soils, and 15 percent components of minor extent (fig. 3).

Tooele soils are well drained and are on lake terraces and fan terraces. Slopes range from 0 to 5 percent. The soils formed in lacustrine sediments and alluvium derived from mixed rock sources. Typically, the surface layer is pale brown and very pale brown fine sandy loam. The underlying material to a depth of 60 inches or more is very pale brown fine sandy loam and fine sand.

Cliffdown soils are somewhat excessively drained and are on fan terraces. Slopes range from 2 to 15 percent. The soils formed in alluvium derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown gravelly sandy loam. The underlying material to a depth of 60 inches or more is very pale brown very gravelly sandy loam.

Timpie soils are well drained and are on lake terraces and fan terraces. Slopes range from 0 to 4 percent. The soils formed in alluvium and lacustrine sediments derived dominantly from limestone and quartzite. Typically, the surface layer is pale brown silt loam. The subsoil to a depth of 60 inches or more is very pale brown silt loam.

Of minor extent are Izamatch, Yenrab, Hiko Springs, Skumpah, and Amtoft soils and Badlands, Dune land, and Rock outcrop.

This unit is used mainly as rangeland or wildlife habitat. A few areas are used for irrigated alfalfa hay, small grain, or pasture. Controlling grazing is necessary to maintain forage production. The soils are suited to irrigated crops. The main limitation is an inadequate supply of irrigation water in most areas.

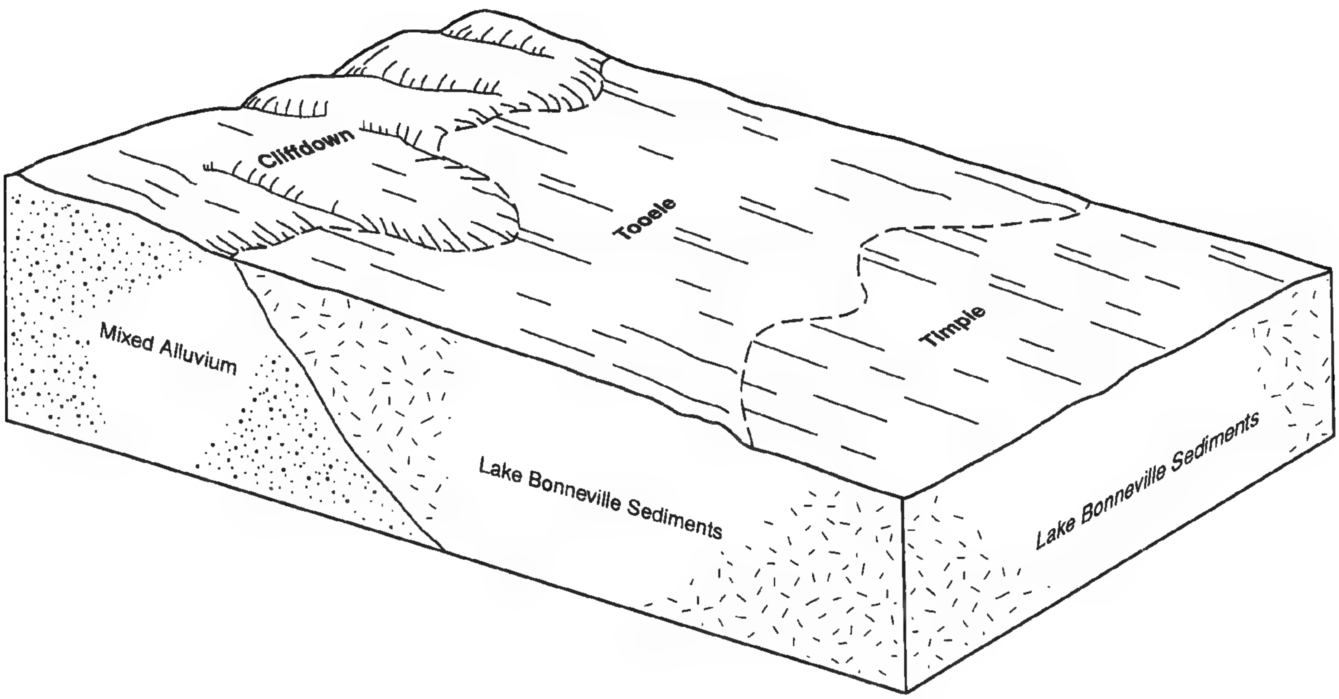

Figure 3.—Typical pattern of soils and parent material in the Tooele-Cliffdown-Timple general soil map unit.

5. Hiko Peak-Taylorsflat-Medburn

Very deep, well drained, nearly level to moderately sloping soils on fan terraces and lake terraces in a semidesert climatic regime

This map unit is mainly in the central, eastern, and southwestern parts of the survey area. Slopes range from 0 to 15 percent. The native vegetation is mainly Wyoming big sagebrush, rabbitbrush, Indian ricegrass, greasewood, and bluebunch wheatgrass. Elevation ranges from 4,300 to 6,000 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 100 to 140 days.

This unit makes up about 8 percent of the survey area. It is about 41 percent Hiko Peak soils, 27 percent Taylorsflat soils, 14 percent Medburn soils, and 18 percent components of minor extent (fig. 4).

Hiko Peak soils are on fan terraces. Slopes range from 2 to 15 percent. The soils formed in alluvium derived from mixed rock sources. Typically, the surface layer is pale brown gravelly loam. The subsoil to a depth of 60 inches or more is light yellowish brown and very pale brown very gravelly loam.

Taylorsflat soils are on fan terraces and lake terraces. Slopes range from 0 to 5 percent. The soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is pale brown loam. The subsoil and the substratum to a depth of 60 inches or more are light yellowish brown and very pale brown loam.

Medburn soils are on lake terraces and fan terraces. Slopes range from 2 to 8 percent. The soils formed in alluvium and lacustrine sediments derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown and light yellowish brown fine sandy loam. The subsoil is light yellowish brown fine sandy loam. The substratum to a depth of 60 inches or more is very pale brown fine sandy loam.

Of minor extent are Spager, Berent, Manassa, Checkett, Birdow, and Amtoft soils and Rock outcrop.

This unit is used mainly as rangeland or wildlife habitat or for irrigated alfalfa hay, small grain, or pasture. Controlling grazing is necessary to maintain forage production. The soils are suited to irrigated crops. The main limitation is an inadequate supply of irrigation water in most areas.

6. Jericho-Scalade-Medburn

Shallow to a hardpan and very deep, well drained, gently sloping to moderately sloping soils on fan terraces in a semidesert climatic regime

This map unit is in the southwestern and

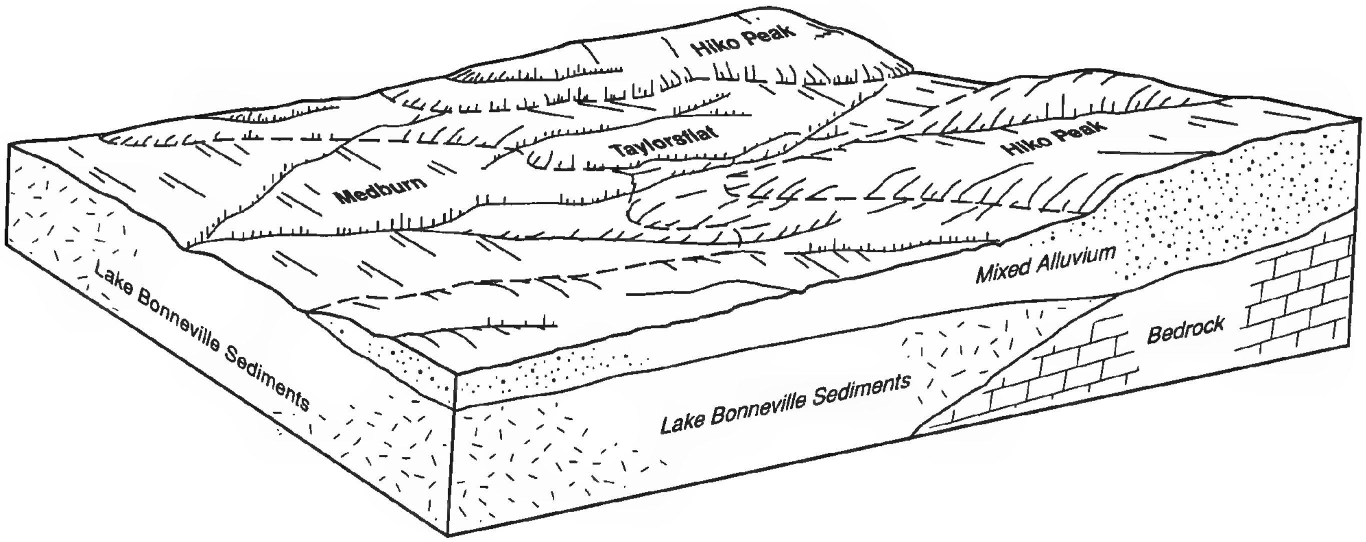

Figure 4.—Typical pattern of soils and parent material in the Hiko Peak-Taylorsflat-Medburn general soil map unit.

southeastern parts of the survey area. Slopes range from 2 to 15 percent. The native vegetation is mainly black sagebrush, Wyoming big sagebrush, Utah juniper, rabbitbrush, and Indian ricegrass. Elevation ranges from 5,000 to 6,100 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 120 days.

This unit makes up about 2 percent of the survey area. It is about 39 percent Jericho soils, 36 percent Scalade soils, 10 percent Medburn soils, and 15 percent soils of minor extent.

Jericho soils are shallow to a hardpan. Slopes range from 2 to 15 percent. The soils formed in alluvium derived dominantly from igneous rocks. Typically, the surface layer is pale brown gravelly sandy loam. The subsoil is very pale brown gravelly sandy loam and very gravelly sandy loam. A hardpan is at a depth of about 14 inches.

Scalade soils are shallow to a hardpan. Slopes range from 2 to 5 percent. The soils formed in alluvium derived dominantly from igneous rocks. Typically, the surface layer is pale brown very fine sandy loam. The subsoil is pale brown and very pale brown very fine sandy loam. A hardpan is at a depth of about 17 inches.

Medburn soils are very deep. Slopes range from 2 to 8 percent. The soils formed in alluvium derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown fine sandy loam. The subsoil is light yellowish brown fine sandy loam. The substratum to a depth of 60 inches or more is very pale brown fine sandy loam.

Of minor extent are Junkett, Hiko Peak, Tooele, Taylorsflat, and Checkett soils.

This unit is used as rangeland or wildlife habitat. The Medburn soils have potential for use as irrigated cropland. Controlling grazing is necessary to maintain forage production.

7. Borvant-Abela-Kapod

Shallow to a hardpan and very deep, well drained, gently sloping to moderately steep soils on fan terraces in an upland climatic regime

This map unit is in the eastern and southwestern parts of the survey area. Slopes range from 2 to 30 percent. The native vegetation is mainly black sagebrush, Utah juniper, mountain big sagebrush, and bluebunch wheatgrass. Elevation ranges from 4,600 to 6,500 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 100 to 160 days.

This unit makes up about 4 percent of the survey area. It is about 29 percent Borvant soils, 25 percent Abela soils, 21 percent Kapod soils, and 25 percent soils of minor extent (fig. 5).

Borvant soils are shallow to a hardpan. Slopes range from 2 to 15 percent. The soils formed in alluvium derived dominantly from limestone. Typically, the surface layer is brown gravelly loam. The subsoil is pale

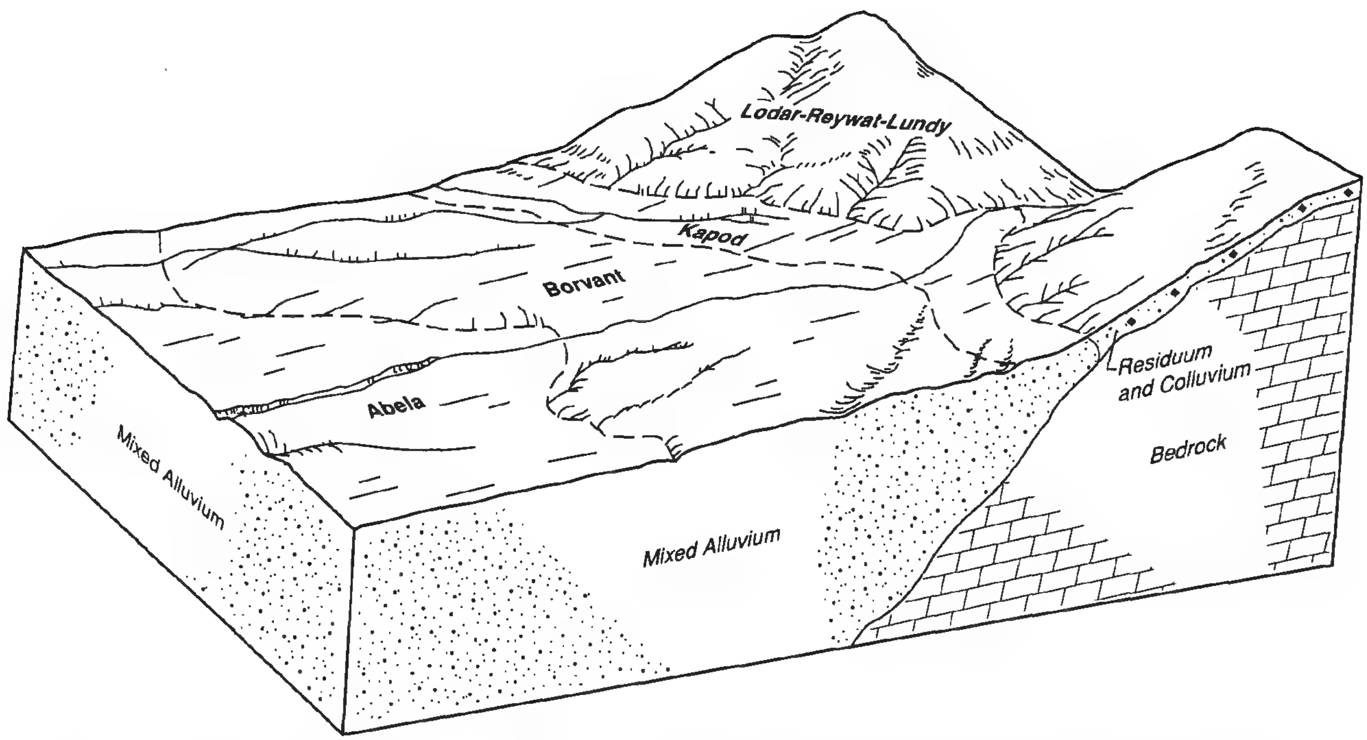

Figure 5.—Typical pattern of soils and parent material in the Borvant-Abela-Kapod general soil map unit (adjacent to the Lodar-Reywat-Lundy general soil map unit).

brown very gravelly loam. A hardpan is at a depth of about 18 inches.

Abela soils are very deep. Slopes range from 2 to 8 percent. The soils formed in alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is grayish brown gravelly loam. The subsoil to a depth of 60 inches or more is pale brown and very pale brown gravelly loam and very gravelly loam.

Kapod soils are very deep. Slopes range from 2 to 30 percent. The soils formed in alluvium derived dominantly from sandstone and limestone. Typically, the surface layer is brown or dark grayish brown gravelly loam, stony loam, or very cobbly loam. The upper part of the subsoil is brown to yellowish brown very cobbly clay loam or very cobbly sandy clay loam. The lower part to a depth of 60 inches or more is light yellowish brown to very pale brown very cobbly sandy loam or very cobbly sandy clay loam.

Of minor extent are Erda, Birdow, Yeates Hollow, Doyce, Holmes, and Springmeyer soils.

This unit is used mainly as rangeland, wildlife habitat, or cropland. Controlling grazing is necessary to maintain good forage production. The Borvant soils are not suited to crops because of the restricted rooting depth. The Abela and Kapod soils are poorly suited to crops because of rock fragments, the slope, and a lack of irrigation water.

8. Lakewin-Erda-Kapod

Very deep, well drained, nearly level to moderately steep soils on fan terraces and lake terraces in an upland climatic regime

This map unit is in the northeastern part of the survey area. Slopes range from 1 to 30 percent. The native vegetation is mainly big sagebrush, bluebunch wheatgrass, rabbitbrush, and Utah juniper. Elevation ranges from 4,250 to 6,500 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 100 to 170 days.

This unit makes up about 1 percent of the survey area. It is about 36 percent Lakewin soils, 25 percent Erda soils, 24 percent Kapod soils, and 15 percent soils of minor extent (fig. 6).

Lakewin soils are on lake terraces. Slopes range from 1 to 5 percent. The soils formed in alluvium and lacustrine sediments derived dominantly from quartzite and limestone. Typically, the surface layer is dark

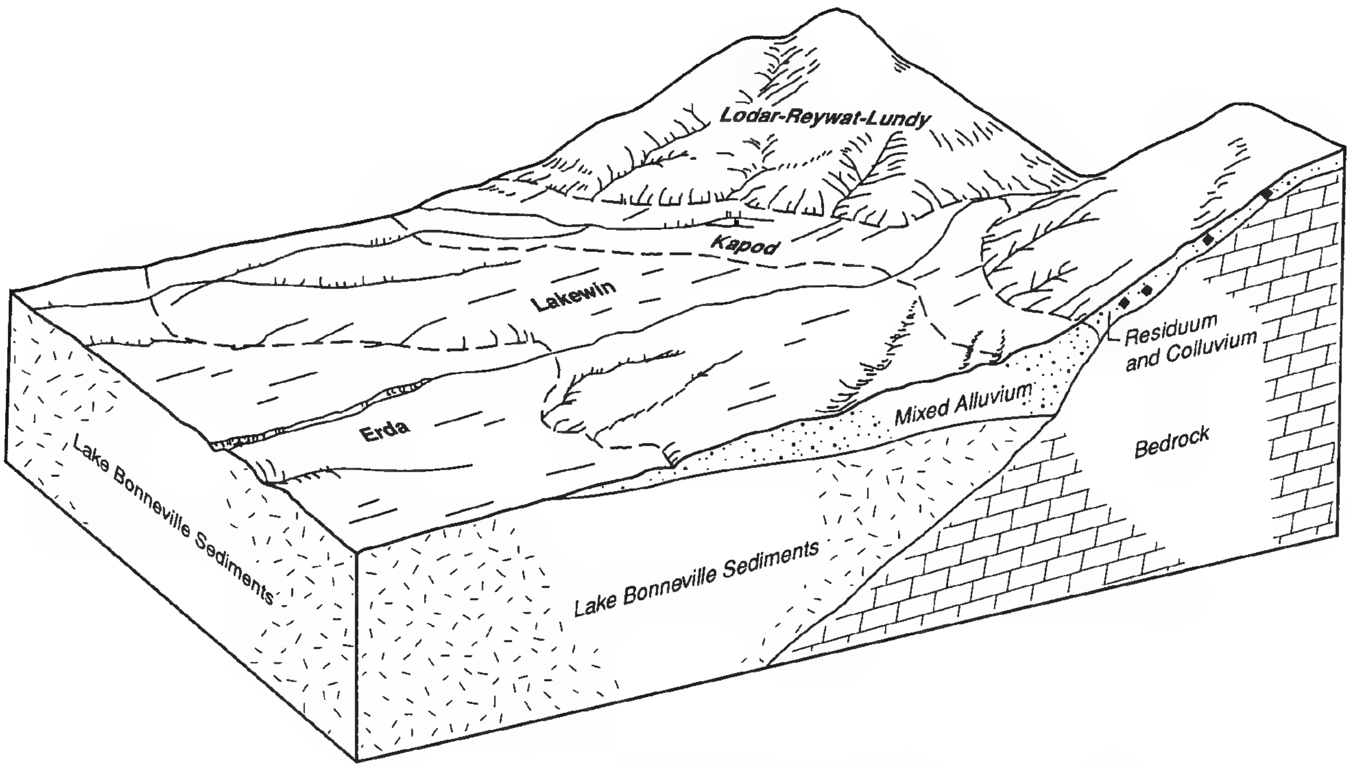

Figure 6.—Typical pattern of soils and parent material in the Lakewin-Erda-Kapod general soil map unit (adjacent to the Lodar-Reywat-Lundy general soil map unit).

grayish brown gravelly loam. The upper part of the subsoil is brown and pale brown gravelly sandy clay loam and very gravelly sandy loam. The lower part to a depth of 60 inches or more is pale brown very gravelly sand.

Erda soils are on fan terraces and lake terraces. Slopes range from 1 to 5 percent. The soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is grayish brown and brown silt loam. The subsoil is pale brown and very pale brown silt loam. The substratum to a depth of 60 inches or more is very pale brown silt loam.

Kapod soils are on fan terraces. Slopes range from 2 to 30 percent. The soils formed in alluvium derived dominantly from sandstone and limestone. Typically, the surface layer is dark grayish brown gravelly loam, very cobbly loam, or stony loam. The upper part of the subsoil is brown to light yellowish brown very cobbly sandy clay loam or very cobbly clay loam. The lower part to a depth of 60 inches or more is light yellowish brown to very pale brown very cobbly sandy loam or very cobbly sandy clay loam.

Of minor extent are Birdow and Yeates Hollow soils.

This unit is used as rangeland or wildlife habitat or for irrigated and nonirrigated crops, such as small grain and alfalfa. Controlling grazing is necessary to maintain forage production. Most areas are suited to nonirrigated small grain and alfalfa in a crop-fallow rotation, but production is generally low because of low precipitation. The soils are generally suited to irrigated crops. The Lakewin soils require light, frequent applications of irrigation water. Some areas of the Kapod soils are not suited to crops because of rock fragments.

Shallow to Very Deep, Well Drained to Excessively Drained, Gently Sloping to Very Steep Soils and Rock Outcrop; On Lake Terraces, Fan Terraces, Hillsides, and Mountainsides

These map units make up about 21 percent of the survey area. The native vegetation is shrubs, grasses, and trees.

These areas are used mainly as rangeland or wildlife habitat.

9. Amtoft-Rock Outcrop-Checkett

Shallow, well drained and somewhat excessively drained, moderately sloping to very steep soils and Rock outcrop

on hillsides and mountainsides in a semidesert climatic regime

This map unit is in the western and central parts of the survey area. Slopes range from 10 to 70 percent. The native vegetation is mainly black sagebrush, Utah juniper, bluebunch wheatgrass, Indian ricegrass, and salmon wildrye. Elevation ranges from 4,250 to 7,000 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 49 degrees F, and the average frost-free period is 100 to 140 days.

This unit makes up about 10 percent of the survey area. It is about 59 percent Amtoft soils, 23 percent Rock outcrop, 12 percent Checkett soils, and 6 percent soils of minor extent.

Amtoft soils are somewhat excessively drained. Slopes range from 30 to 70 percent. The soils formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is light brownish gray very cobbly loam. The subsoil is pale brown and very pale brown very cobbly loam and extremely cobbly loam. Bedrock is at a depth of about 16 inches.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Checkett soils are well drained. Slopes range from 10 to 40 percent. The soils formed in residuum and colluvium derived dominantly from igneous and metamorphic rocks. Typically, the surface layer is pale brown very cobbly loam. The subsoil is light yellowish brown very cobbly clay loam and very cobbly loam. Bedrock is at a depth of about 14 inches.

Of minor extent are Hiko Peak, Spager, Cliffdown, Lodar, and Reywat soils.

This unit is used mainly as rangeland or wildlife habitat. The suitability for livestock grazing is poor because of the slope. Controlling grazing is necessary to maintain forage production.

10. Ridd-Kilburn-Wasatch

Moderately deep and very deep, well drained to excessively drained, gently sloping to very steep soils on lake terraces, fan terraces, hillsides, and mountainsides in an upland climatic regime

This map unit is in the northeastern part of the survey area on Antelope Island. Slopes range from 2 to 70 percent. The native vegetation is mainly foxtail fescue and threeawn. Elevation ranges from 4,200 to 6,500 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 140 to 180 days.

This unit makes up about 1 percent of the survey area. It is about 40 percent Ridd soils, 31 percent Kilburn soils, 11 percent Wasatch soils, and 18 percent components of minor extent.

Ridd soils are moderately deep and are well drained. They are on hillsides and mountainsides. Slopes range from 6 to 70 percent. The soils formed in residuum and colluvium derived dominantly from gneiss, schist, and quartzite. Typically, the surface layer is brown very stony sandy loam. The subsoil is yellowish brown very stony sandy loam. The substratum is light olive brown very stony sandy loam. Bedrock is at a depth of about 36 inches.

Kilburn soils are very deep and are somewhat excessively drained. They are on lake terraces and fan terraces. Slopes range from 2 to 10 percent. The soils formed in alluvium and colluvium derived dominantly from gneiss, schist, and quartzite. Typically, the surface layer is grayish brown gravelly sandy loam. The subsoil is pale brown very gravelly sandy loam. The substratum to a depth of 60 inches or more is pale brown very cobbly loamy sand.

Wasatch soils are very deep and are excessively drained. They are on fan terraces. Slopes range from 6 to 25 percent. The soils formed in alluvium derived from mixed rock sources. Typically, the surface layer is brown loamy coarse sand. The underlying material to a depth of 60 inches or more is pale brown sand.

Of minor extent are Reywat, Birdow, Dynal, and Logan soils and Rock outcrop.

This unit is used mainly as rangeland or wildlife habitat. The suitability for livestock grazing ranges from poor in the more sloping areas of the Ridd soils to good in areas of the Kilburn soils. Controlling grazing is necessary to maintain forage production.

11. Lodar-Reywat-Lundy

Shallow, well drained, steep and very steep soils on hillsides and mountainsides in an upland or mountain climatic regime

This map unit is in the southwestern, central, and eastern parts of the survey area. Slopes range from 30 to 60 percent. The native vegetation is mainly bluebunch wheatgrass, pinyon, Utah juniper, black sagebrush, and cliffrose. Elevation ranges from 5,200 to 8,000 feet. The average annual precipitation is 12 to 18 inches, the mean annual air temperature is 40 to 52 degrees F, and the average frost-free period is 80 to 140 days.

This unit makes up about 6 percent of the survey area. It is about 25 percent Lodar soils, 23 percent Reywat soils, 20 percent Lundy soils, and 32 percent components of minor extent (fig. 7).

Lodar soils are on mountainsides. They formed in

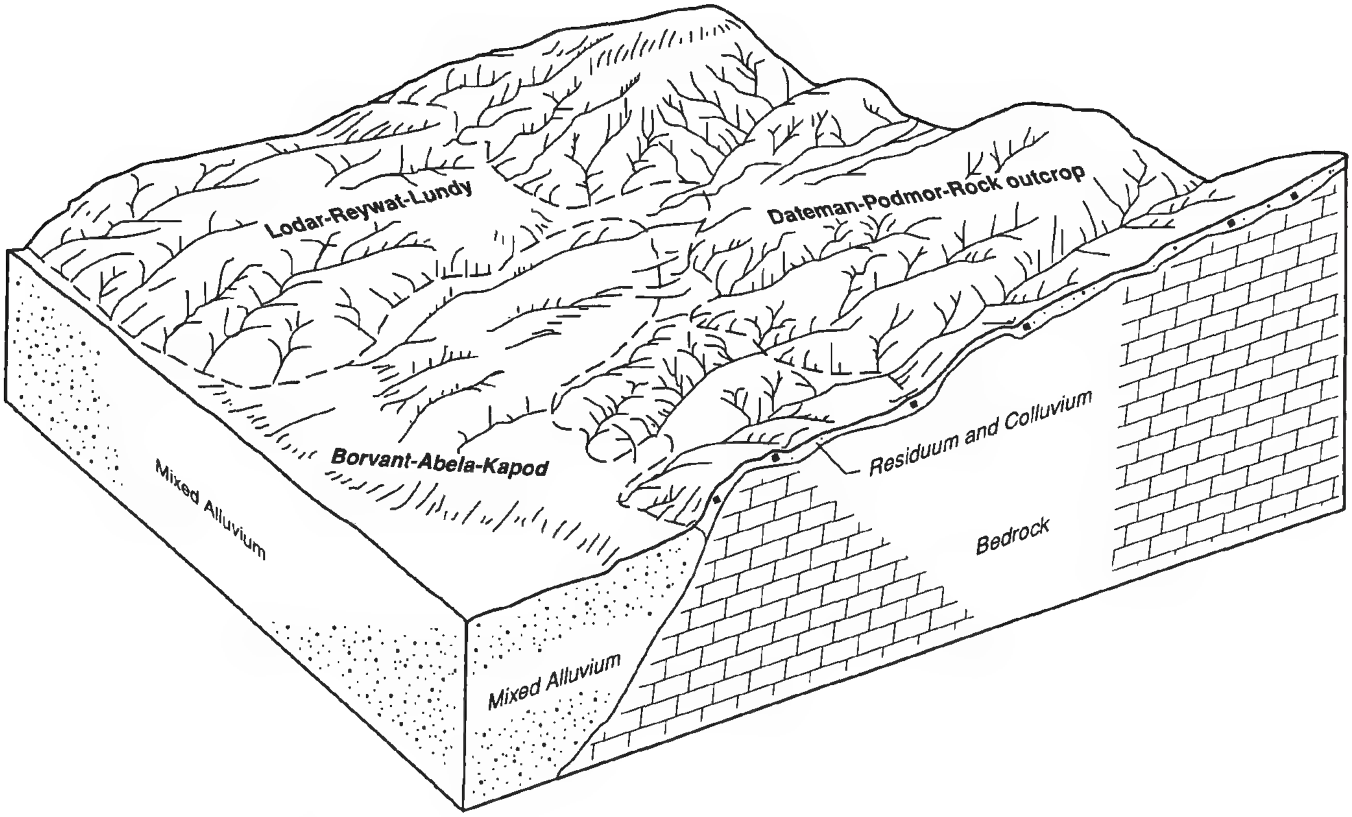

Figure 7.—Typical pattern of soils and parent material in the Lodar-Reywat-Lundy and Dateman-Podmor-Rock outcrop general soil map units (adjacent to the Borvant-Abela-Kapod general soil map unit).

residuum and colluvium derived dominantly from limestone. Typically, the surface layer is brown very cobbly loam. The subsoil is pale brown very cobbly loam. Bedrock is at a depth of about 16 inches.

Reywat soils are on hillsides and mountainsides. They formed in residuum and colluvium derived dominantly from quartzite and igneous rocks. Typically, the surface layer is grayish brown very cobbly loam. The subsoil is grayish brown or brown very gravelly clay loam. Bedrock is at a depth of about 11 inches.

Lundy soils are on mountainsides. They formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is brown very cobbly loam. The subsoil is yellowish brown very cobbly loam. Bedrock is at a depth of about 18 inches.

Of minor extent are Broad, Abela, Dateman, Podmor, Cristo, and Yeates Hollow soils and Rock outcrop.

This unit is used mainly as rangeland or wildlife habitat. In a few areas the juniper and pinyon trees are harvested for firewood, fence posts, or Christmas trees. The suitability for livestock grazing is poor because of the slope. Controlling grazing is necessary to maintain forage production.

12. Dateman-Podmor-Rock Outcrop

Moderately deep, well drained, steep and very steep soils and Rock outcrop on mountainsides in a mountain or high mountain climatic regime

This map unit is in the eastern and southwestern parts of the survey area. Slopes range from 30 to 70 percent. The native vegetation is mainly fir trees, mountain brome, mountain big sagebrush, and bluebunch wheatgrass. Elevation ranges from 6,000 to 10,000 feet. The average annual precipitation is 16 to 35 inches, the mean annual air temperature is 35 to 45 degrees F, and the average frost-free period is 70 to 90 days.

This unit makes up about 4 percent of the survey area. It is about 23 percent Dateman soils, 20 percent Podmor soils, 19 percent Rock outcrop, and 38 percent soils of minor extent (fig. 7).

Dateman soils formed in residuum and colluvium derived dominantly from limestone. Slopes range from 30 to 70 percent. Typically, the surface layer is very dark grayish brown to dark brown gravelly loam. The subsoil is brown very cobbly loam. Bedrock is

at a depth of about 36 inches.

Podmor soils formed in colluvium and residuum derived dominantly from quartzite. Slopes range from 30 to 60 percent. Typically, the surface layer is brown very cobbly loam to very gravelly loam. The subsoil is brown very cobbly loam. Bedrock is at a depth of about 23 inches.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Of minor extent are Onaqui, Broad, Lundy, Cristo, and Flygare soils.

This unit is used mainly as rangeland or wildlife habitat. The suitability for livestock grazing is poor because of the slope. Controlling grazing is necessary to maintain forage production.

Broad Land Use Considerations

The soils in the survey area vary widely in their potential for various land uses. About 26,000 acres is used for irrigated crops, mainly alfalfa, small grain, and corn silage. About 10,000 acres is used for irrigated pasture and sod. This irrigated land is scattered throughout the survey area but is mainly in the Grantsville, Erda, and Tooele areas in general soil map units 2, 4, 5, 7, and 8. Some areas of these map units have a high potential for irrigated crops where irrigation water is available.

About 7,000 acres in the survey area is used for nonirrigated crops, mainly small grain and alfalfa. Most of this nonirrigated cropland is in the Hickman Bench, Tooele, and Erda areas in general soil map units 7 and 8. A shortage of moisture is the most limiting factor affecting the production of nonirrigated crops. Wheat-fallow rotations are generally necessary.

The majority of the survey area is used as rangeland. Parts of each general soil map unit are grazed. General soil map units 1, 2, 7, 8, and 10 are used as summer and winter range for cattle and sheep. They are limited mainly by a lack of moisture in the summer. General soil map units 3, 4, 5, 6, and 9 are used mainly as winter range for cattle and sheep. They are also limited mainly by a lack of moisture. General soil map units 11 and 12 are used mainly as summer range for cattle and sheep. They are limited mainly by a short growing season.

About 14 percent of the survey area is woodland. Approximately 640,000 acres in general soil map units 6, 7, 9, and 11 support juniper and pinyon trees. About 35,000 acres in map unit 12 support mostly Douglas-fir and white fir. The soils in this unit are poorly suited to woodland because of low production and the slope.

About 2,000 acres in the survey area is used as urban land. The areas best suited to this use are in general soil map units 3, 4, 5, 6, 7, and 8. Map units 1 and 2 are poorly suited because of wetness. Some areas in map units 6 and 7 are poorly suited because of the shallow depth to a hardpan. Most areas of map units 9, 10, 11, and 12 are poorly suited to urban uses because of bedrock and the slope.

Some areas in map units 1 and 2 are poorly suited to recreational development because of flooding. Most areas of map units 3 through 12 are suited to various types of recreational development. The slope limits the use of map units 9 through 12 for most kinds of recreational development, but these areas provide excellent opportunities for camping, hiking, and horseback riding.

About 30 percent of the survey area consists of miscellaneous areas. These include about 1,335,000 acres of Playas, 125,000 acres of Salt flats, 30,000 acres of Dune land, 2,000 acres of Pits, and 1,500 acres of Slickens and mine dumps. Most of the Playas and Salt flats are in general soil map unit 1 in the Great Salt Lake Desert. This unit is used mainly as sites for military testing and training. Most of the Dune land is in map unit 3. The Pits and the Slickens and mine dumps are scattered throughout the survey area. These miscellaneous areas are mostly barren.

Detailed Soil Map Units

The map units delineated on the detailed maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series.* Except for differences in texture of the surface layer or of the underlying layers, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases.* Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Skumpah silt loam, 0 to 2 percent slopes, is a phase of the Skumpah series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Kanosh-Saltair-Logan complex, 0 to 2 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The map unit Playas is an example.

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. The most detailed units are in agricultural and urban areas. The detail of mapping was selected to meet the anticipated long-term use of the survey, and the map units were designed to meet the needs for that use.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Map Unit Descriptions

1—Abela gravelly loam, 2 to 8 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from limestone and quartzite. Slopes are medium in length and are convex. The present vegetation in most areas is mountain big sagebrush, rabbitbrush, snakeweed, yellowbrush, cheatgrass, and bluebunch wheatgrass. Elevation is 4,600 to 6,000 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is grayish brown and brown gravelly loam about 10 inches thick. The upper 10 inches of the subsoil is pale brown gravelly loam. The lower part of the subsoil to a depth of 60 inches or more is very pale brown very gravelly loam. In some areas the surface layer is loam, stony loam, or very gravelly loam.

Included with this soil in mapping are small areas of Borvant soils on the less sloping parts of fan remnants. These soils are shallow to a hardpan. They support juniper and black sagebrush. Also included are the loamy Birdow soils in drainageways. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately rapid in the Abela soil. Available water capacity is moderate (about 5 to 7 inches). The water-supplying capacity is 7 to 9 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used for rangeland, irrigated pasture (fig. 8), irrigated cropland, nonirrigated cropland, or building site development.

The potential plant community is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, bluegrass, mountain big sagebrush, and antelope bitterbrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitations are rock fragments in the surface layer and low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species. Because of the rock fragments, the use of specialized equipment is necessary.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, field corn, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, and furrow. The design of irrigation systems should not exceed the intake rate of the soil. The soil is suited to nonirrigated crops. Soil moisture is too low for annual cropping. A suitable rotation is 1 year of small grain followed by 1 year of summer fallow. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion and conserve soil moisture.

If good management practices are applied, irrigated alfalfa can yield about 5 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre. Nonirrigated winter wheat can yield about 22 bushels per acre, and nonirrigated alfalfa can yield about 2 tons per acre.

This soil is well suited to building site development. Frost action is a moderate limitation affecting roads. The removal of rock fragments in disturbed areas is needed for landscaping, particularly in areas used for lawns. Topsoil should be stockpiled and used to reclaim

Figure 8.—Irrigated pasture in an area of Abela gravelly loam, 2 to 8 percent slopes. The town of Tooele and the Oquirrh Mountains are in the background.

areas disturbed during construction.

The land capability classification is IIIe, irrigated, and VIs, nonirrigated. The range site is Upland Gravelly Loam (Mountain Big Sagebrush).

2—Abela very gravelly loam, 5 to 15 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from limestone and quartzite. Slopes are medium in length and are convex. The present vegetation in most areas is bluebunch wheatgrass, cheatgrass, mountain big sagebrush, Utah juniper, and yellowbrush. Elevation is 5,000 to 6,000 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is grayish brown and brown very gravelly loam about 11 inches thick. The upper 11 inches of the subsoil is pale brown very gravelly loam. The lower part of the subsoil to a depth of 60 inches or more is very pale brown extremely gravelly sandy loam. In some areas the surface layer is gravelly loam, stony loam, or very stony loam. In other areas slopes are more than 15 percent.

Included with this soil in mapping are small areas of Borvant soils. These soils are shallow to a hardpan. They support juniper and black sagebrush. Also included are the loamy Birdow soils in drainageways.

Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately rapid in the Abela soil. Available water capacity is moderate (about 4 to 6 inches). The water-supplying capacity is 6.5 to 8.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used as rangeland or for wildlife habitat. A few areas are used for the production of juniper trees for fence posts and firewood. In some areas the juniper trees have been removed by fire and mechanical treatment.

The potential plant community is an overstory of pinyon and Utah juniper with about 50 percent canopy cover. The understory vegetation is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are mountain big sagebrush, black sagebrush, bluebunch wheatgrass, bluegrass, and antelope bitterbrush.

The site index for pinyon and Utah juniper is 50. Average productivity is low. Average annual yields are 1 to 2 cords of wood per acre. The potential for Christmas tree production is poor.

The suitability for livestock grazing is poor because of low forage production.

The suitability for rangeland seeding is poor. The main limitation is rock fragments in the surface layer. Because of the rock fragments, the use of specialized equipment is necessary.

If this unit is used for roads or for building site development, the main limitations are the slope and the potential for frost action. Topsoil should be stockpiled and used to reclaim areas disturbed during construction.

The land capability classification is VIs, nonirrigated. The woodland site is Upland Stony Loam (Pinyon-Utah Juniper).

3—Amtoft, dry-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on mountainsides and hillsides. Slopes are short and convex. The present vegetation in most areas is salina wildrye, black sagebrush, and Utah juniper. Elevation is 4,250 to 7,000 feet. The average annual precipitation is 8 to 10 inches, the mean annual air temperature is 45 to 48 degrees F, and the average frost-free period is 100 to 140 days.

This unit is about 60 percent Amtoft very cobbly loam, dry, 30 to 70 percent slopes; 20 percent Rock outcrop; and 20 percent other soils. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Amtoft soil is shallow and somewhat excessively drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is light brownish gray and pale brown very cobbly loam about 11 inches thick. The subsoil is very pale brown extremely cobbly loam. Fractured limestone bedrock is at a depth of about 17 inches. In some areas, especially in the Grassy Mountains, slopes are less than 30 percent.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the very deep Hiko Peak soils on the upper fan remnants and in drainageways. Also included are the very deep Cliffdown soils on low fan remnants and Spager soils on high fan remnants. Spager soils are shallow to a hardpan.

Permeability is moderately rapid in the Amtoft soil. Available water capacity is very low (about 1.0 to 1.5 inches). The water-supplying capacity is 1.0 to 2.5 inches. Effective rooting depth is limited by bedrock at a depth of 10 to 20 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat. A few areas are used for the production of Utah juniper trees for fence posts and firewood.

The potential plant community on the Amtoft soil is an overstory of Utah juniper with about 30 percent canopy cover. The understory is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are black sagebrush, salina wildrye, Indian ricegrass, and shadscale.

The site index for Utah juniper is 30. Average productivity is low. Average yields are less than 1 cord of wood per acre. The potential for post production is poor.

The suitability for livestock grazing on the Amtoft soil is poor because of low forage production and the slope.

The suitability of the Amtoft soil for rangeland seeding is very poor. The main limitations are the slope, the restricted rooting depth, the rock fragments, and the available water capacity. Seeding is not recommended.

This unit is poorly suited to roads and to building site development. The main limitations are the slope, the stoniness, and the depth to bedrock.

The land capability classification of the Amtoft soil is VIIe, nonirrigated. The woodland site is Semidesert Shallow Loam (Utah Juniper-Salina Wildrye). The land capability classification of the Rock outcrop is VIII. No woodland site is assigned for the Rock outcrop.

4—Amtoft-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on mountainsides and hillsides. Slopes are short and convex. The present vegetation in most areas is Utah juniper, bluebunch wheatgrass, black sagebrush, and Indian ricegrass. Elevation is 5,500 to 7,000 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 48 degrees F, and the average frost-free period is 100 to 140 days.

This unit is about 65 percent Amtoft very cobbly loam, 30 to 70 percent slopes; 15 percent Rock outcrop; and 20 percent other soils. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Amtoft soil is shallow and somewhat excessively drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is light brownish gray and pale brown very cobbly loam about 9 inches thick. The subsoil is very pale brown extremely cobbly loam. Fractured limestone bedrock is at a depth of about 16 inches.

Rock outcrop consists of exposures of barren limestone, mainly on escarpments and ridges.

Included in mapping are small areas of the shallow Lodar and Lundy soils on the upper slopes under Utah juniper and pinyon; the shallow Checkett soils under black sagebrush; the very deep Hiko Peak soils on the upper fan remnants and in drainageways; Spager soils, which are shallow to a hardpan and are on high fan remnants; and the very deep Cliffdown soils on low fan remnants.

Permeability is moderately rapid in the Amtoft soil. Available water capacity is very low (about 1.0 to 1.5 inches). The water-supplying capacity is 1.5 to 3.0 inches. Effective rooting depth is limited by bedrock at a depth of 10 to 20 inches. The content of organic matter in the surface layer is about 1 to 2 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat (fig. 9). A few areas are used for the production of Utah juniper trees for fence posts and firewood.

The potential plant community on the Amtoft soil is an overstory of Utah juniper with about 30 percent canopy cover. The understory is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are black sagebrush, bluebunch wheatgrass, and Indian ricegrass.

The site index for Utah juniper is 30. Average productivity is low. Average yields are less than 1 cord of wood per acre. The potential for post production is poor.

The suitability for livestock grazing on the Amtoft soil is poor because of low forage production and the slope.

The suitability of the Amtoft soil for rangeland seeding is very poor. The main limitations are the slope, the restricted rooting depth, the rock fragments, and the available water capacity. Seeding is not recommended.

This unit is poorly suited to roads and to building site development. The main limitations are the slope, the stoniness, and the depth to bedrock.

The land capability classification of the Amtoft soil is VIIe, nonirrigated. The woodland site is Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass). The land capability classification of the Rock outcrop is VIII. No woodland site is assigned for the Rock outcrop.

5—Berent-Hiko Peak complex, 2 to 15 percent slopes. This map unit is on stabilized sand dunes and fan remnants. Slopes are hummocky. The present vegetation in most areas of the Berent soil is Utah juniper, Wyoming big sagebrush, needleandthread, and cheatgrass, and that in most areas of the Hiko Peak soil is Wyoming big sagebrush, rabbitbrush, Indian ricegrass, and cheatgrass. Elevation is 4,500 to 5,800 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 140 days.

This unit is about 60 percent Berent loamy fine sand, 2 to 15 percent slopes, on sand dunes; 20 percent Hiko Peak gravelly loam, 2 to 15 percent slopes, in interdune areas; and 20 percent other soils and Dune land. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Berent soil is very deep and is somewhat excessively drained. It formed in eolian sands derived from lacustrine deposits. Typically, the surface layer is pale brown loamy fine sand about 6 inches thick. The underlying material to a depth of 60 inches or more is pale brown and light yellowish brown fine sand. In some areas the surface layer is fine sandy loam, fine sand, or sand. In other areas slopes are more than 15 percent.

The Hiko Peak soil is very deep and is well drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is pale brown gravelly loam about 4 inches thick. The subsoil to a depth of 60 inches or more is very pale brown and light yellowish brown very gravelly loam.

Included in mapping are small areas of the loamy Medburn soils along drainageways, the loamy Taylorsflat soils on low fan remnants, Dune land, Rock outcrop, and the shallow Amtoft soils on ridges.

Permeability is rapid in the Berent soil. Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 4.0 to 6.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent.

Figure 9.—An area of Amtoft-Rock outcrop complex, 30 to 70 percent slopes, in the Cedar Mountains. This map unit is used as rangeland or for wildlife habitat.

Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is severe.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is moderate (about 5 to 7 inches). The water-supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Berent soil is an overstory of Utah juniper with about 30 percent canopy cover. The understory vegetation is about 45

percent perennial grasses, 20 percent forbs, and 35 percent shrubs. Important plant species are needleandthread, Indian ricegrass, and fourwing saltbush.

The site index for Utah juniper is 25 on the Berent soil. Average productivity is low. Average yields are less than 1 cord of wood per acre. The potential for post production is poor.

The potential plant community on the Hiko Peak soil is about 45 percent perennial grasses, 15 percent forbs, and 40 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass.

The suitability for livestock grazing on the Berent soil is poor because of low forage production. The suitability for livestock grazing on the Hiko Peak soil is good.

The suitability of the Berent soil for rangeland seeding is poor. The main limitations are the texture of the surface layer and low precipitation. The suitability of the Hiko Peak soil for rangeland seeding is fair. The main limitation is low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

If the Berent soil is used for roads or for building site development, the main limitations are the slope; a poor filtering capacity, which affects septic tank absorption fields; and a severe hazard of soil blowing. The Hiko Peak soil is well suited to roads and to building site development.

The land capability classification of the Berent soil is VIIs, nonirrigated. The woodland site is Semidesert Sand (Utah Juniper). The land capability classification of the Hiko Peak soil is VIs, nonirrigated. The range site is Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.

6—Birdow loam, 1 to 4 percent slopes. This very deep, well drained soil is on flood plains, stream terraces, and alluvial fans. It formed in alluvium derived dominantly from limestone and quartzite. Slopes are long and are linear or slightly concave. The present vegetation in most areas is basin big sagebrush, bluebunch wheatgrass, rabbitbrush, and basin wildrye. Elevation is 4,250 to 6,200 feet. The average annual precipitation is 10 to 14 inches, the mean annual air temperature is 45 to 48 degrees F, and the average frost-free period is 100 to 170 days.

Typically, the surface layer is grayish brown and brown loam about 28 inches thick. The subsoil is pale brown loam about 22 inches thick. Below this to a depth of 60 inches or more is a buried surface layer of brown loam. In some areas the soil is sandy loam. In other areas slopes are more than 4 percent.

Included with this soil in mapping are small areas of the gravelly Abela soils and the silty Erda soils. These soils are on convex fan remnants. Also included are the gravelly Lakewin soils on lake terraces. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderate in the Birdow soil. Available water capacity is high (about 9 to 10 inches). The water-supplying capacity is 7.0 to 10.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is about 2 to 4 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate. This soil is subject to rare flooding.

This unit is used for rangeland, wildlife habitat, building site development, irrigated pasture, or irrigated cropland.

The potential plant community is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are basin wildrye, western wheatgrass, and basin big sagebrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitation is low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, furrow, and controlled flooding. The design of irrigation systems should not exceed the intake rate of the soil. In areas of higher precipitation, this soil is suitable for nonirrigated crops. A suitable rotation is 1 year of small grain followed by a year of summer fallow. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion and conserve soil moisture.

If good management practices are applied, irrigated alfalfa can yield about 7 tons per acre, irrigated barley can yield about 100 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre. Areas that have a shorter frost-free period can yield about 4 tons per acre of irrigated alfalfa and 70 bushels per acre of irrigated barley.

If this soil is used for roads or for building site development, the potential for frost action and a slow percolation rate are moderate limitations. Maintaining drainage channels helps to control spring runoff.

The land capability classification is IIe, irrigated, and VIs, nonirrigated. The range site is Loamy Bottom (Basin Wildrye).

7—Borvant gravelly loam, 2 to 15 percent slopes. This well drained soil is on fan remnants. It is shallow over a petrocalcic horizon. It formed in alluvium derived dominantly from limestone. Slopes are short or medium in length and are convex. The present vegetation in most areas is Utah juniper, black sagebrush, pinyon, bluebunch wheatgrass, and Wyoming big sagebrush (fig. 10). Elevation is 5,200 to 6,500 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is brown gravelly loam about 7 inches thick. The subsoil is pale brown very gravelly loam about 11 inches thick. A carbonate-cemented hardpan is at a depth of about 18 inches. The underlying layers, extending from a depth of 25 inches to a depth of 60 inches or more, are stratified very gravelly sandy loam, very gravelly loamy sand, and cemented hardpan. In some areas the surface layer is gravelly sandy loam, cobbly loam, or very gravelly loam. In other areas the hardpan is at a depth of more than 20 inches. In places slopes are more than 15 percent.

Included with this soil in mapping are small areas of the very deep Abela and Kapod soils on the upper fan remnants; the loamy Birdow soils in drainageways; and Spager and Hiko Peak soils on the lower fan remnants. Spager soils are shallow to a hardpan. Hiko Peak soils are very deep. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderate in the Borvant soil. Available water capacity is very low (about 1.5 to 2.0 inches). The water-supplying capacity is 3.0 to 4.5 inches. Effective rooting depth is limited by a hardpan at a depth of 10 to 20 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is rapid, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used as rangeland or woodland or for wildlife habitat.

The potential plant community is an overstory of pinyon and Utah juniper with about 40 percent canopy cover. The understory vegetation is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and antelope bitterbrush.

The site index for pinyon and Utah juniper is 40. Average productivity is low. Average yields are 1 to 2 cords of wood per acre. Some areas are used for the production of posts, firewood, or Christmas trees.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitations are the restricted rooting depth and the available water capacity. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

This unit is poorly suited to roads and to building site development. The main limitation is the depth to a hardpan.

The land capability classification is VIIs, nonirrigated. The woodland site is Upland Shallow Hardpan (Pinyon-Utah Juniper).

8—Bramwell silt loam, 0 to 2 percent slopes. This very deep, somewhat poorly drained soil is on low lake terraces and stream terraces. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are medium in length and are linear to concave. The vegetation in areas that are not cultivated is mainly inland saltgrass, alkali sacaton, alkali bluegrass, sedges, and black greasewood. Elevation is 4,200 to 5,300 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 49 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. The upper 14 inches of the subsoil is light brownish gray silt loam, and the lower 16 inches is light gray silty clay loam. The substratum to a depth of 60 inches or more is light gray silty clay loam. In some areas the surface layer is loam. In other areas the subsoil and the substratum are fine sandy loam or very fine sandy loam. Areas that have been leached by irrigation water are less saline.

Included with this soil in mapping are small areas of the poorly drained Logan soils in low lying areas under inland saltgrass and rushes, the well drained Manassa soils on ridges under greasewood and sagebrush, the well drained Taylorsflat soils on low lake terraces under greasewood, and the loamy Kanosh soils in landscape positions similar to those of the Bramwell soil. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is slow in the Bramwell soil. Available water capacity is moderate or high (about 6.5 to 9.0 inches). Effective rooting depth is limited by a seasonal high water table at a depth of 2.5 to 3.5 feet from March through July. In drained areas the high water table is at a depth of 3.5 to 5.0 feet. The content of organic matter in the surface layer is 2 to 5 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for irrigated crops or pasture (fig. 11). Some areas are used as rangeland or for building site development.

Figure 10.—Utah juniper and pinyon in an area of Borvant gravelly loam, 2 to 15 percent slopes. The Simpson Mountains are in the background.

The potential plant community is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are inland saltgrass, alkali sacaton, alkali bluegrass, and basin wildrye.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by paying careful attention to seedbed conditions, by seeding prior to periods of high soil moisture, and by seeding adapted species.

This soil is suited to irrigated crops if the content of salt and alkali is reduced by incorporating a drainage and leaching program. Suitable crops are small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line, handline, furrow, and controlled flooding. Because of the slow intake rate in

Figure 11.—*Irrigated alfalfa in an area of Bramwell silt loam, 0 to 2 percent slopes, near Vernon.*

the surface layer, caution is needed if the installation of a center-pivot system is considered. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion. This soil is not suited to nonirrigated crops because of low soil moisture.

If good management practices are applied, irrigated alfalfa can yield about 7 tons per acre, irrigated pasture can yield about 8 animal unit months per acre, and irrigated barley can yield about 90 bushels per acre.

This soil is poorly suited to roads and to building site development. The main limitations are the shrink-swell potential, the potential for frost action, low strength, and wetness.

The land capability classification is IVw, irrigated, and VIIw, nonirrigated. The range site is Alkali Bottom (Alkali Sacaton).

10—Broad, moist-Reywat, moist-Rock outcrop association, 30 to 60 percent slopes. This map unit is on hillsides and mountainsides. Slopes are short and convex. The present vegetation in most areas of the Broad soil is Gambel oak, bluebunch wheatgrass, mountain big sagebrush, mulesear dock, Sandberg bluegrass, and cutleaf filaree. The present vegetation in most areas of the Reywat soil is bluebunch wheatgrass, Sandberg bluegrass, threeawn, black sagebrush, mountain big sagebrush, and cheatgrass. Elevation is 5,200 to 7,200 feet. The average annual precipitation is 13 to 19 inches, the mean annual air temperature is 43

to 52 degrees F, and the average frost-free period is 100 to 140 days.

This unit is about 40 percent Broad gravelly loam, moist, 30 to 60 percent slopes, mainly on north-facing slopes; 30 percent Reywat very gravelly loam, moist, 30 to 60 percent slopes, mainly on south-facing slopes; 10 percent Rock outcrop; and 20 percent other soils and talus.

The Broad soil is moderately deep and is well drained It formed in residuum and colluvium derived dominantly from quartzite and sandstone. Typically, the surface layer is dark grayish brown gravelly loam about 10 inches thick. The upper 10 inches of the subsoil is yellowish brown and brown very gravelly clay loam, and the lower 18 inches is pale brown extremely cobbly loam. Sandstone bedrock is at a depth of about 38 inches. In some areas the surface layer is gravelly sandy loam, very gravelly loam, or loam. In other areas bedrock is at a depth of more than 40 inches.

The Reywat soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from quartzite and igneous rocks. Typically, the surface layer is grayish brown very gravelly loam about 4 inches thick. The subsoil is brown very gravelly clay loam. Quartzite bedrock is at a depth of about 13 inches. In some areas the surface layer is very cobbly loam. In other areas the depth to bedrock is less than 10 inches.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the very deep Yeates Hollow soils on fan remnants under bluebunch wheatgrass and mountain big sagebrush; areas of very deep, loamy soils in drainageways under bigtooth maple, chokecherry, and willows; talus slopes in the steeper areas below the Rock outcrop; and the moderately deep Dateman soils on north-facing slopes under fir trees.

Permeability is moderately slow in the Broad soil. Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 7.0 to 9.5 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 3 to 5 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderately slow in the Reywat soil. Available water capacity is very low (about 1.0 to 1.5 inches). The water-supplying capacity is 2.0 to 3.5 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Broad soil is about 35 percent perennial grasses, 10 percent forbs, and 55 percent shrubs. Important plant species are Gambel oak, bearded wheatgrass, bluebunch wheatgrass, and mountain big sagebrush.

The potential plant community on the Reywat soil is about 55 percent perennial grasses, 10 percent forbs, and 35 percent shrubs. Important plant species are bluebunch wheatgrass and black sagebrush.

The suitability for livestock grazing is poor because of the slope.

The suitability for rangeland seeding is very poor. The main limitations are the slope, the rock fragments, and the restricted rooting depth. Seeding is not recommended.

The land capability classification for the Broad and Reywat soils is VIIe, nonirrigated. The range site for the Broad soil is Mountain Gravelly Loam (Oak). The range site for the Reywat soil is Upland Shallow Loam (Black Sagebrush). The land capability classification of the Rock outcrop is VIII. No range site is assigned for the Rock outcrop.

11—Checkett-Rock outcrop complex, 10 to 40 percent slopes. This map unit is on hillsides and mountainsides. Slopes are short and convex. The present vegetation in most areas is black sagebrush, cheatgrass, Nevada bluegrass, and Indian ricegrass. Elevation is 4,400 to 6,700 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 49 degrees F, and the average frost-free period is 100 to 140 days.

This unit is about 75 percent Checkett very cobbly loam, 10 to 40 percent slopes; 10 percent Rock outcrop; and 15 percent other soils. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Checkett soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from igneous and metamorphic rocks. Typically, the surface layer is pale brown very cobbly loam about 3 inches thick. The subsoil is light yellowish brown very cobbly clay loam and very cobbly loam. Fractured quartzite bedrock is at a depth of about 14 inches. In some areas the surface layer is very gravelly loam, very stony loam, or gravelly loam.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the very deep Hiko Peak soils on fan remnants and in drainageways, the shallow Reywat soils on north-facing mountainsides, and areas that have slopes of more than 40 percent.

Permeability is moderate in the Checkett soil. Available water capacity is very low (about 1.0 to 1.5

inches). The water-supplying capacity is 1 to 3 inches. Effective rooting depth is limited by bedrock at a depth of 14 to 20 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Checkett soil is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Indian ricegrass, and horsebrush.

The suitability for livestock grazing on the Checkett soil is only fair because of moderate forage production and the slope.

The suitability of the Checkett soil for rangeland seeding is very poor. The main limitations are the restricted rooting depth, the available water capacity, and the slope. Seeding is not recommended.

This unit is poorly suited to roads and to building site development. The main limitations are the slope and the depth to bedrock.

The land capability classification of the Checkett soil is VIIs, nonirrigated. The range site is Semidesert Shallow Loam (Black Sagebrush). The land capability classification of the Rock outcrop is VIII. No range site is assigned for the Rock outcrop.

12—Cliffdown gravelly sandy loam, 2 to 15 percent slopes. This very deep, somewhat excessively drained soil is on fan remnants. It formed in alluvium derived dominantly from sedimentary rocks. Slopes are medium in length or long and are linear to convex. The present vegetation in most areas is shadscale, Indian ricegrass, rabbitbrush, spiny horsebrush, and cheatgrass. Elevation is 4,300 to 6,000 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 47 to 52 degrees F, and the average frost-free period is 130 to 150 days.

Typically, the surface layer is pale brown gravelly sandy loam about 5 inches thick. The underlying material to a depth of 60 inches or more is very pale brown very gravelly sandy loam. In places the surface layer is gravelly loam or very gravelly sandy loam. In a few areas slopes are more than 15 percent.

Included with this soil in mapping are small areas of the sandy Izamatch soils on lake terraces, the loamy Tooele soils on lake terraces, the sandy Yenrab soils on stabilized sand dunes, and areas where bedrock is at a depth of less than 60 inches. Included areas make up about 15 percent of the total acreage of this unit.

Permeability is moderately rapid in the Cliffdown soil. Available water capacity is low (about 3.0 to 4.5 inches). The water-supplying capacity is 2.5 to 4.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 0.5 percent to 1.0 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland or for wildlife habitat. Small areas are used for irrigated alfalfa, irrigated barley, or irrigated pasture.

The potential plant community is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are shadscale, galleta, bud sagebrush, and Indian ricegrass.

The suitability for livestock grazing is poor because of low forage production.

The suitability for rangeland seeding is very poor. The main limitation is low precipitation. Seeding is generally not recommended.

This soil is suited to irrigated crops of alfalfa hay, pasture, orchards, and small grain. The gravel on or near the surface limits tillage and can damage equipment. Maintaining a permanent cover of vegetation is more suitable in areas of this soil. Sprinkler systems are suitable for irrigation. The design of the sprinkler systems should not exceed the intake rate of the soil. This soil is not suited to nonirrigated crops because of low soil moisture.

If good management practices are applied, irrigated alfalfa can yield about 5 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

If this soil is used for roads or for building site development, the main limitation is the slope.

The land capability classification is IVe, irrigated, and VIIs, nonirrigated. The range site is Desert Gravelly Loam (Shadscale).

13—Cristo loam, 10 to 60 percent slopes. This moderately deep, well drained soil is on mountainsides. It formed in residuum and colluvium derived dominantly from shale and limestone. Slopes are medium in length and are convex. The present vegetation in most areas is bluebunch wheatgrass, basin wildrye, rabbitbrush, and mountain big sagebrush. Elevation is 6,500 to 8,800 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 41 to 43 degrees F, and the average frost-free period is 60 to 70 days.

Typically, the surface layer is dark grayish brown loam about 9 inches thick. The subsoil is grayish brown gravelly clay loam about 13 inches thick. The substratum is pale brown extremely gravelly clay loam about 13 inches thick. Fractured shale bedrock is at a

depth of about 35 inches. In some areas the surface layer is gravelly loam. In other areas the subsoil is very gravelly shaly clay.

Included with this soil in mapping are small areas of the shallow Lodar soils on south-facing mountainsides, the shallow Lundy soils on north-facing mountainsides, Rock outcrop on ridges and escarpments, and areas of very deep gravelly loam in drainageways. Included areas make up about 15 percent of the total acreage of this unit.

Permeability is moderately slow in the Cristo soil. Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 7 to 10 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 5 percent. Runoff is very rapid, and the hazard of water erosion is very severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, birchleaf mountainmahogany, bluegrass, and mountain big sagebrush.

The suitability for livestock grazing is poor or fair because of the slope.

The suitability for rangeland seeding is very poor. The main limitation is the slope. Seeding is not recommended.

This unit is susceptible to landslides and slumping.

The land capability classification is VIIe, nonirrigated. The range site is Mountain Gravelly Loam (Mountain Big Sagebrush).

14—Dateman-Podmor-Rock outcrop association, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are medium in length and are linear to convex. The present vegetation in most areas of the Dateman soil is Douglas-fir, white fir, mountain brome, snowberry, and quaking aspen. The present vegetation in most areas of the Podmor soil is mountain big sagebrush, bluebunch wheatgrass, western wheatgrass, and snowberry. Elevation is 7,000 to 10,000 feet. The average annual precipitation is 16 to 35 inches, the mean annual air temperature is 35 to 45 degrees F, and the average frost-free period is 70 to 90 days.

This unit is about 40 percent Dateman gravelly loam, 30 to 70 percent slopes, on north-facing slopes; 30 percent Podmor very cobbly loam, 30 to 60 percent slopes, on south-, east-, and west-facing slopes; 10 percent Rock outcrop; and 20 percent other soils.

The Dateman soil is moderately deep and is well drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface is covered with a mat of partly decomposed needles, leaves, and twigs. This mat is about 1 inch thick. The surface layer is very dark grayish brown and dark brown gravelly loam about 22 inches thick. The subsoil is brown very cobbly loam about 14 inches thick. Fractured limestone bedrock is at a depth of about 36 inches. In some areas bedrock is at a depth of more than 40 inches.

The Podmor soil is moderately deep and is well drained. It formed in colluvium and residuum derived dominantly from quartzite. Typically, the upper part of the surface layer is brown very cobbly loam about 3 inches thick. The lower part is brown very gravelly loam about 13 inches thick. The subsoil is brown very cobbly loam. Fractured quartzite bedrock is at a depth of about 23 inches.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the shallow Lundy soils on mountainsides under bluebunch wheatgrass; the very deep Flygare soils on mountainsides under aspen; the shallow Onaqui soils on ridges under low sagebrush; and areas of very deep, loamy soils in drainageways under bigtooth maple, chokecherry, and willows.

Permeability is moderate in the Dateman soil. Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 8 to 14 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderate in the Podmor soil. Available water capacity is very low (about 1.5 to 2.5 inches). The water-supplying capacity is 5 to 8 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as woodland or rangeland or for wildlife habitat.

The potential plant community on the Dateman soil is an overstory of Douglas-fir and white fir with about 60 percent canopy cover. The understory vegetation is about 45 percent perennial grasses, 20 percent forbs, and 35 percent shrubs. Important plant species are Oregongrape, sheep fescue, bluegrass, and mountain brome.

The potential plant community on the Podmor soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are

bluebunch wheatgrass, bulbous oniongrass, antelope bitterbrush, and mountain big sagebrush.

The site index for Douglas-fir is 65 on the Dateman soil, and the site index for white fir is 60. The suitability for harvesting is poor because of the slope and the severe hazard of erosion. The potential for production of Christmas trees is fair.

The suitability for livestock grazing is poor because of the slope. Forage production is low on the Dateman soil.

Rangeland seeding is not suitable in areas of this unit because of the slope. Seeding is not recommended.

The land capability classification of the Dateman and Podmor soils is VIIe, nonirrigated. The woodland site for the Dateman soil is High Mountain Stony Loam (Conifer). The range site for the Podmor soil is Mountain Stony Loam (Antelope Bitterbrush). The land capability classification of the Rock outcrop is VIII. No woodland site or range site is assigned for the Rock outcrop.

14A—Dateman-Podmor, moist-Rock outcrop association, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are medium in length and are linear to convex. The present vegetation in most areas of the Dateman soil is Douglas-fir, white fir, mountain brome, snowberry, and quaking aspen. The present vegetation on the Podmor soil is Gambel oak, bluebunch wheatgrass, mountain big sagebrush, snowberry, and bluegrass. Elevation is 6,000 to 10,000 feet. The average annual precipitation is 18 to 35 inches, the mean annual air temperature is 35 to 45 degrees F, and the average frost-free period is 70 to 90 days.

This unit is about 50 percent Dateman gravelly loam, 30 to 70 percent slopes, on north-facing slopes; 20 percent Podmor very cobbly loam, moist, 30 to 60 percent slopes, on south-, east-, and west-facing slopes; 10 percent Rock outcrop; and 10 percent other soils.

The Dateman soil is moderately deep and is well drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface is covered with a mat of partially decomposed needles, leaves, and twigs. This mat is about 1 inch thick. The surface layer is very dark grayish brown and dark brown gravelly loam about 22 inches thick. The subsoil is brown very cobbly loam about 14 inches thick. Fractured limestone bedrock is at a depth of about 36 inches. In some areas fractured bedrock is at a depth of more than 40 inches.

The Podmor soil is moderately deep and is well drained. It formed in colluvium and residuum derived dominantly from quartzite. Typically, the upper part of the surface layer is brown very gravelly loam about 3 inches thick. The lower part is brown very gravelly loam about 13 inches thick. The subsoil is brown very cobbly loam. Fractured quartzite bedrock is at a depth of about 23 inches.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the shallow Lundy soils on mountainsides under bluebunch wheatgrass; the very deep Flygare soils on mountainsides under aspen; the shallow Onaqui soils on ridges under low sagebrush; barren talus slopes; and areas of very deep, loamy soils in drainageways under bigtooth maple, chokecherry, and willows.

Permeability is moderate in the Dateman soil. Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 8 to 14 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderate in the Podmor soil. Available water capacity is very low (about 1.5 to 2.5 inches). The water-supplying capacity is 6 to 9 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as woodland or rangeland or for wildlife habitat.

The potential plant community on the Dateman soil is an overstory of Douglas-fir and white fir with about 60 percent canopy cover. The understory vegetation is about 45 percent perennial grasses, 20 percent forbs, and 35 percent shrubs. Important plant species are Oregongrape, sheep fescue, bluegrass, and mountain brome.

The potential plant community on the Podmor soil is about 35 percent perennial grasses, 10 percent forbs, and 55 percent shrubs. Important plant species are Gambel oak, bearded wheatgrass, bluebunch wheatgrass, and mountain big sagebrush.

The site index for Douglas-fir is 65 on the Dateman soil, and the site index for white fir is 60. The suitability for harvesting wood products is poor because of the slope and the severe hazard of erosion. The potential for production of Christmas trees is fair.

The suitability for livestock grazing is poor because of the slope. Forage production is low on the Dateman soil.

Rangeland seeding is not suitable in areas of this

unit because of the slope. Seeding is not recommended.

The land capability classification of the Dateman and Podmor soils is VIIe, nonirrigated. The woodland site for the Dateman soil is High Mountain Stony Loam (Conifer). The range site for the Podmor soil is Mountain Gravelly Loam (Oak). The land capability classification of the Rock outcrop is VIII. No woodland site or range site is assigned for the Rock outcrop.

15—Doyce loam, 2 to 8 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived from mixed rock sources. Slopes are medium in length or long and are convex. The present vegetation in most areas is mountain big sagebrush, rabbitbrush, bluebunch wheatgrass, bitterbrush, and some juniper. Elevation is 4,800 to 6,300 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is brown loam about 10 inches thick. The upper 11 inches of the subsoil is pale brown and light yellowish brown clay loam, and the lower 21 inches is very pale brown loam. The substratum to a depth of 60 inches or more is very pale brown loam. In places the surface layer is silt loam. In some areas the lower part of the subsoil has gravelly textures. In other areas the slope is more than 8 percent.

Included with this soil in mapping are small areas of the silty Erda soils, the gravelly Abela soils, Borvant soils in landscape positions similar to those of the Doyce soil, and the loamy Birdow soils along drainageways. Borvant soils are shallow to a hardpan. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderately slow in the Doyce soil. Available water capacity is high (about 9.0 to 10.5 inches). The water-supplying capacity is 9.0 to 10.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat. Some areas are used for nonirrigated or irrigated crops.

The potential plant community is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, Indian ricegrass, and bluegrass.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitation is low precipitation. The suitability for seeding can be improved by seeding prior to periods of high soil moisture and by seeding adapted species.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, field corn, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, and furrow. The design of irrigation systems should not exceed the intake rate of the soil. The soil is suited to nonirrigated crops. Soil moisture is too low for annual cropping. A suitable rotation is 1 year of small grain followed by 1 year of summer fallow. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion and conserve soil moisture.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 100 bushels per acre, irrigated pasture can yield about 7 animal unit months per acre, nonirrigated winter wheat can yield about 15 bushels per acre, and nonirrigated alfalfa can yield about 2 tons per acre.

If this unit is used for roads or for building site development, the main limitations are the potential for frost action and the slow percolation rate.

The land capability classification is IIIe, irrigated, and IVs, nonirrigated. The range site is Upland Loam (Mountain Big Sagebrush).

16—Dune land. Dune land consists of ridges and the intervening troughs made up of fine sand-sized particles that shift with the wind. The dunes formed on the lake plains and low lake terraces between Knolls and Dugway. This unit supports less than 10 percent vegetative cover. The dunes are about 5 to 15 feet in height. The average annual precipitation is 6 to 8 inches.

Included in mapping are small areas of Rock outcrop along hillsides; the sandy, oolitic Dynal soils; and the sandy Yenrab soils on stabilized sand dunes. Included areas make up about 10 percent of the total acreage of this unit.

Dune land is a good source of fine sands. These areas have very little value as rangeland, but they provide habitat for rodents, lizards, and insects. Some areas are used as a military training range.

The land capability classification is VIII.

17—Dynal sand, 2 to 15 percent slopes. This very deep, somewhat excessively drained soil is on stabilized sand dunes (fig. 12). It formed in very strongly calcareous, oolitic, eolian sand derived dominantly from lacustrine sediments. Slopes are hummocky. The present vegetation in most areas is Indian ricegrass, greasewood, rabbitbrush, and fourwing

Figure 12.—An area of Dynal sand, 2 to 15 percent slopes, near Knolls. Mud-flat playas are in the background.

saltbush. Elevation is 4,200 to 4,250 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 48 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is very pale brown sand about 1 inch thick. The underlying material to a depth of 60 inches or more is very pale brown and light gray sand. In some areas the surface layer is sandy loam or loamy sand.

Included with this soil in mapping are small areas of Dune land and beach deposits that are barren of vegetation; the silty Skumpah soils on low lake terraces; the poorly drained, saline Saltair soils on lake plains; the loamy Tooele soils on low lake terraces; and the

sandy Yenrab soils in landscape positions similar to those of the Dynal soil. Included areas make up about 10 percent of the total acreage of this unit.

Permeability is rapid in the Dynal soil. Available water capacity is low (about 2.5 to 4.0 inches). The water-supplying capacity is 2.5 to 5.0 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 0.5 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is very severe.

This unit is used for rangeland, wildlife habitat, or recreation.

The potential plant community is about 10 percent perennial grasses, 25 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, Torrey seepweed, fourwing saltbush, and shadscale.

The suitability for livestock grazing is poor because of low forage production.

The suitability for rangeland seeding is very poor. The main limitations are the texture of the surface layer, low precipitation, and the available water capacity. Seeding is not recommended.

This unit is poorly suited to roads and to building site development. The main limitations are the instability of the soil and a poor filtering capacity, which affects septic tank absorption fields.

The land capability classification is VIIs, nonirrigated. The range site is Desert Oolitic Dunes (Black Greasewood).

18—Dynal-Tooele, saline, complex, 0 to 15 percent slopes. This map unit is on stabilized sand dunes and low lake terraces. Slopes are hummocky. The present vegetation in most areas of the Dynal soil is Indian ricegrass, fourwing saltbush, black greasewood, and rabbitbrush. The present vegetation in most areas of the Tooele soil is black greasewood, cheatgrass, gray molly, and shadscale. Elevation is 4,200 to 4,250 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit is about 55 percent Dynal sand, 2 to 15 percent slopes, on vegetated oolitic dunes; 25 percent Tooele fine sandy loam, saline, 0 to 5 percent slopes, on low lake terraces; and 20 percent other soils and Playas. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Dynal soil is very deep and is somewhat excessively drained. It formed in eolian sands derived dominantly from calcareous, oolitic lacustrine sediments. Typically, the surface layer is white sand about 6 inches thick. The underlying material to a depth of 60 inches or more also is white sand. In some areas the surface layer is loamy sand.

The Tooele soil is very deep and is well drained. It formed in eolian material, lacustrine sediments, and alluvium derived from mixed rock sources. Typically, the surface layer is pale brown fine sandy loam about 10 inches thick. The underlying material to a depth of 60 inches or more is very pale brown fine sandy loam. In some areas gravelly textures are below a depth of 30 inches.

Included in mapping are small areas of the saline Skumpah soils on low lake terraces under black greasewood; the poorly drained, saline Saltair soils on lake plains under pickleweed; and Playas.

Permeability is rapid in the Dynal soil. Available water capacity is low (about 2.5 to 4.0 inches). The water-supplying capacity is 2.5 to 5.0 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 0.5 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is very severe.

Permeability is moderately rapid in the Tooele soil. Available water capacity is low (about 3.0 to 5.5 inches). The water-supplying capacity is 3 to 5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Dynal soil is about 10 percent perennial grasses, 25 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, Torrey seepweed, fourwing saltbush, and shadscale.

The potential plant community on the Tooele soil is about 25 percent perennial grasses, 10 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, bottlebrush squirreltail, alkali sacaton, and seepweed.

The suitability for livestock grazing is poor because of low forage production and the relative unpalatability of the dominant plants.

The suitability for rangeland seeding is very poor. The main limitations are the available water capacity, the texture of the surface layer, and low precipitation in areas of the Dynal soil and low precipitation and the content of salt and alkali in areas of the Tooele soil. Seeding is not recommended.

The Dynal soil is poorly suited to roads and to building site development. The main limitations are the instability of the soil and a poor filtering capacity, which

affects septic tank absorption fields. The Tooele soil is well suited to these uses.

The land capability classification is VIIs, nonirrigated. The range site of the Dynal soil is Desert Oolitic Dunes (Black Greasewood). The range site of the Tooele soil is Alkali Flat (Black Greasewood).

19—Erda silt loam, 1 to 5 percent slopes. This very deep, well drained soil is on fan remnants and lake terraces. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are medium in length or long and are linear or slightly convex. The vegetation in areas that are not cultivated is mainly Wyoming big sagebrush, rabbitbrush, bluebunch wheatgrass, and Indian ricegrass. Elevation is 4,250 to 6,000 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 130 to 170 days.

Typically, the surface layer is grayish brown and brown silt loam about 14 inches thick. The subsoil is pale brown and very pale brown silt loam about 25 inches thick. The substratum to a depth of 60 inches or more is very pale brown silt loam. In some areas the surface layer is loam or fine sandy loam. In other areas the substratum is silty clay loam.

Included with this soil in mapping are small areas of the somewhat poorly drained Bramwell soils on the lower fan remnants under inland saltgrass, the gravelly Lakewin soils on the higher fan remnants, the loamy Birdow soils in drainageways, and the gravelly Abela soils on ridges. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Erda soil. Available water capacity is high or very high (about 9.5 to 11.0 inches). The water-supplying capacity is 9 to 11 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for nonirrigated cropland, irrigated cropland (fig. 13), rangeland, building site development, or wildlife habitat.

The potential plant community is about 60 percent perennial grasses, 10 percent forbs, and 30 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, Indian ricegrass, and bluegrass.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitation is low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, field corn, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, and furrow. The design of irrigation systems should not exceed the intake rate of the soil. The soil is suited to nonirrigated crops. Soil moisture is too low for annual cropping. A suitable rotation is 1 year of small grain followed by 1 year of summer fallow. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion and conserve soil moisture.

If good management practices are applied, irrigated alfalfa can yield about 7 tons per acre, irrigated barley can yield about 100 bushels per acre, irrigated pasture can yield about 7 animal unit months per acre, nonirrigated winter wheat can yield about 22 bushels per acre, and nonirrigated alfalfa can yield about 2 tons per acre.

This unit is well suited to building site development. Low strength and the potential for frost action are moderate limitations on sites used for roads.

The land capability classification is IIe, irrigated, and IVs, nonirrigated. The range site is Upland Loam (Mountain Big Sagebrush).

20—Flygare-Dateman-Rock outcrop association, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are medium in length and are convex. The present vegetation in most areas of the Flygare soil is quaking aspen, mountain brome, blue wildrye, and nodding bluegrass. The present vegetation in most areas of the Dateman soil is white fir, Douglas-fir, and mountain brome. Elevation is 7,200 to 10,000 feet. The average annual precipitation is 22 to 35 inches, the mean annual air temperature is 35 to 45 degrees F, and the average frost-free period is 50 to 90 days.

This unit is about 40 percent Flygare cobbly loam, 30 to 60 percent slopes, on south-, east-, and west-facing slopes; 20 percent Dateman gravelly loam, 30 to 70 percent slopes, on north-facing slopes; 20 percent Rock outcrop; and 20 percent other soils and talus.

The Flygare soil is very deep and is well drained. It formed in alluvium and colluvium derived dominantly from interbedded quartzite and limestone. Typically, the surface layer is dark brown cobbly loam about 22 inches thick. The subsurface layer is pale brown very cobbly loam about 14 inches thick. The subsoil is pale brown very cobbly sandy clay loam and light yellowish brown extremely cobbly loam.

The Dateman soil is moderately deep and is well drained. It formed in residuum and colluvium derived

Figure 13.—Irrigated alfalfa in an area of Erda silt loam, 1 to 5 percent slopes, near Erda. The Oquirrh Mountains are in the background.

dominantly from limestone. Typically, the surface is covered with a mat of partially decomposed needles, leaves, and twigs. This mat is about 1 inch thick. The surface layer is very dark grayish brown and dark brown gravelly loam about 22 inches thick. The subsoil is brown very cobbly loam about 14 inches thick.

Fractured limestone bedrock is at a depth of about 36 inches. In some areas fractured bedrock is at a depth of more than 40 inches.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the moderately deep Podmor soils on the lower south-facing slopes under mountain big sagebrush, the shallow Onaqui soils on ridges under low sagebrush, and talus slopes in very steep areas.

Permeability is moderate in the Flygare soil. Available water capacity is moderate (about 5.0 to 6.5 inches). The water-supplying capacity is 12 to 17 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 5 to 10 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderate in the Dateman soil. Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 8 to 14 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as woodland or for wildlife habitat.

The potential plant community on the Flygare soil is an overstory of aspen with about 50 percent canopy cover. The understory vegetation is about 40 percent perennial grasses, 30 percent forbs, and 30 percent shrubs. Important plant species are mountain snowberry, mountain brome, blue wildrye, common chokecherry, and butterweed.

The potential plant community on the Dateman soil is an overstory of Douglas-fir and white fir with about 60 percent canopy cover. The understory vegetation is about 45 percent perennial grasses, 20 percent forbs, and 35 percent shrubs. Important plant species are Oregongrape, sheep fescue, bluegrass, and mountain brome.

The site index for aspen is 55 on the Flygare soil, and the site index for white fir is 31. The site index for Douglas-fir is 65 on the Dateman soil, and the site index for white fir is 60. The suitability for harvesting wood products is poor because of the slope and the severe hazard of erosion. The potential for production of Christmas trees is fair on the Dateman soil.

The suitability for livestock grazing is poor because of the slope.

Rangeland seeding is generally not suitable in areas of this unit because of the slope. Forage production is low on the Dateman soil.

The land capability classification of the Flygare and Dateman soils is VIIe, nonirrigated. The woodland site for the Flygare soil is High Mountain Loam (Aspen). The woodland site for the Dateman soil is High Mountain Stony Loam (Conifer). The land capability classification of the Rock outcrop is VIII. No woodland site is assigned for the Rock outcrop.

21—Hiko Peak gravelly loam, 2 to 15 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived from mixed rock sources. Slopes are medium in length and are convex. The present vegetation in most areas is Wyoming big sagebrush, Douglas rabbitbrush, Indian ricegrass, and cheatgrass. Elevation is 4,400 to 6,000 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is pale brown gravelly loam about 4 inches thick. The upper 8 inches of the subsoil is light yellowish brown very gravelly loam, and the lower part to a depth of 60 inches or more is very pale brown and light yellowish brown very gravelly loam. In some areas the surface layer is loam, very gravelly loam, or stony sandy loam. In other areas the subsoil is very cobbly loam.

Included with this soil in mapping are small areas of the loamy Medburn soils on the less sloping lower fan remnants, the sandy Berent soils on stabilized sand dunes under juniper, and Spager soils in landscape positions similar to those of the Hiko Peak soil. Spager soils are shallow to a hardpan. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is moderate (about 5.0 to 6.5 inches). The water-supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used for rangeland; irrigated alfalfa, pasture, and grain; building site development; or wildlife habitat.

The potential plant community is about 45 percent perennial grasses, 15 percent forbs, and 40 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitations are low precipitation, the slope, and the rock fragments. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by

seeding drought-tolerant species. Because of the slope and the rock fragments, the use of specialized equipment is necessary.

This soil is suited to irrigated crops of alfalfa hay, pasture, orchards, and small grain. The gravel on or near the surface limits tillage and can damage equipment. Maintaining a permanent cover of vegetation is more suitable in areas of this soil. Sprinkler systems are suitable for irrigation. The design of the sprinkler systems should not exceed the intake rate of the soil. This soil is not suited to nonirrigated crops because of low soil moisture.

If good management practices are applied, irrigated alfalfa can yield about 5 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

This unit is well suited to roads and to building site development. The removal of rock fragments in disturbed areas is needed for landscaping.

The land capability classification is IVe, irrigated, and VIs, nonirrigated. The range site is Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.

22—Hiko Peak very stony loam, 2 to 8 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived from mixed rock sources. Slopes are medium in length and are convex. The present vegetation in most areas is black sagebrush, bluebunch wheatgrass, rabbitbrush, and Utah juniper. Elevation is 4,900 to 5,300 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is pale brown very stony loam about 4 inches thick. The upper 8 inches of the subsoil is light yellowish brown very stony loam, and the lower part to a depth of 60 inches or more is very pale brown extremely gravelly sandy loam. In some areas the surface layer is very cobbly loam, stony loam, or very stony sandy loam.

Included with this soil in mapping are small areas of the loamy Medburn soils on low fan remnants, the sandy Berent soils on stabilized sand dunes under Utah juniper, the gravelly Cliffdown soils on the lower south-facing slopes, the shallow Amtoft soils on ridges, and Rock outcrop. Included areas make up about 10 percent of the total acreage of this unit.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is low (about 3.5 to 5.0 inches). The water-supplying capacity is 5 to 7 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 35 percent perennial grasses, 5 percent forbs, and 60 percent shrubs. Important plant species are black sagebrush, bluebunch wheatgrass, Indian ricegrass, shadscale, and Douglas rabbitbrush.

The suitability for livestock grazing is poor because of low forage production.

The suitability for rangeland seeding is poor. The main limitations are low precipitation and the stones in the surface layer. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species. Because of the rock fragments, the use of specialized equipment is necessary.

If this unit is used for roads or for building site development, the main limitation is the stoniness.

The land capability classification is VIIs, nonirrigated. The range site is Semidesert Stony Loam (Black Sagebrush).

23—Hiko Peak-Checkett complex, 2 to 40 percent slopes. This map unit is on fan remnants and hillsides. Slopes are short or medium in length and are convex. The present vegetation in most areas of the Hiko Peak soil is Wyoming big sagebrush, rabbitbrush, Indian ricegrass, and cheatgrass. The present vegetation in most areas of the Checkett soil is black sagebrush, cheatgrass, Nevada bluegrass, and Indian ricegrass. Elevation is 4,500 to 5,600 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 140 days.

This unit is about 45 percent Hiko Peak gravelly loam, 2 to 15 percent slopes, on fan remnants; 35 percent Checkett very cobbly loam, 10 to 40 percent slopes, on hillsides; and 20 percent other soils and Rock outcrop. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Hiko Peak soil is very deep and is well drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is pale brown gravelly loam about 4 inches thick. The upper 8 inches of the subsoil is light yellowish brown very gravelly loam, and the lower part to a depth of 60 inches or more is very pale brown and light yellowish brown very gravelly loam, stony loam, or gravelly sandy loam. In some areas the subsoil is very cobbly loam.

The Checkett soil is shallow and well drained. It formed in residuum and colluvium derived dominantly

from igneous and metamorphic rocks. Typically, the surface layer is pale brown very cobbly loam about 3 inches thick. The subsoil is light yellowish brown very cobbly clay loam and very cobbly loam. Fractured quartzite bedrock is at a depth of about 14 inches. In some areas the surface layer is very gravelly loam, very stony loam, or gravelly loam.

Included in mapping are small areas of the loamy Medburn soils in drainageways, the sandy Berent soils on stabilized sand dunes, and Rock outcrop on escarpments and ridges.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is moderate (about 5.0 to 6.5 inches). The water-supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

Permeability is moderate in the Checkett soil. Available water capacity is very low (about 1.0 to 1.5 inches). The water-supplying capacity is 1 to 3 inches. Effective rooting depth is limited by bedrock at a depth of 14 to 20 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Hiko Peak soil is about 45 percent perennial grasses, 15 percent forbs, and 40 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass.

The potential plant community on the Checkett soil is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are bluebunch wheatgrass, black sagebrush, Indian ricegrass, and horsebrush.

The suitability for livestock grazing on the Hiko Peak soil is good. The suitability for livestock grazing on the Checkett soil is only fair because of moderate forage production and the slope.

The suitability of the Hiko Peak soil for rangeland seeding is fair. The main limitation is low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species. The suitability of the Checkett soil for rangeland seeding is very poor. The main limitations are the restricted rooting depth and the available water capacity. Seeding is not recommended.

The Hiko Peak soil is well suited to roads and to building site development. The removal of rock fragments in disturbed areas is needed for landscaping. The Checkett soil is poorly suited to roads and to building site development. The main limitations are the slope and the depth to bedrock.

The land capability classification of the Hiko Peak soil is VIs, nonirrigated. The range site is Semidesert Gravelly Loam (Wyoming Big Sagebrush) North. The land capability classification of the Checkett soil is VIIs, nonirrigated. The range site is Semidesert Shallow Loam (Black Sagebrush).

24—Hiko Peak-Taylorsflat complex, 1 to 15 percent slopes. This map unit is on fan remnants and lake terraces. Slopes are short or medium in length. The present vegetation in most areas of the Hiko Peak soil is Wyoming big sagebrush, Indian ricegrass, Sandberg bluegrass, and cheatgrass. The present vegetation in most areas of the Taylorsflat soil is Wyoming big sagebrush, Indian ricegrass, bottlebrush squirreltail, and cheatgrass. Elevation is 4,700 to 5,500 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 110 to 140 days.

This unit is about 45 percent Hiko Peak gravelly loam, 2 to 15 percent slopes, on convex slopes; 40 percent Taylorsflat loam, 1 to 5 percent slopes, in linear or slightly concave positions; and 15 percent other soils. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Hiko Peak soil is very deep and is well drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is pale brown gravelly loam about 4 inches thick. The upper 8 inches of the subsoil is light yellowish brown very gravelly loam, and the lower part to a depth of 60 inches or more is very pale brown and light yellowish brown very gravelly loam. In some areas the surface layer is very gravelly loam, stony loam, or gravelly sandy loam. In other areas the subsoil is very cobbly loam.

The Taylorsflat soil is very deep and is well drained. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is pale brown loam about 4 inches thick. The upper 5 inches of the subsoil is light yellowish brown loam, and the lower 42 inches is very pale brown loam. The substratum to a depth of 60 inches or more is very pale brown loam. In some areas the surface layer is silt loam or sandy loam.

Included in mapping are small areas of the saline Taylorsflat soils on low lake terraces, the loamy Medburn soils in drainageways, and Spager soils on ridges. Spager soils are shallow to a hardpan.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is moderate (about 5.0 to

6.5 inches). The water-supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

Permeability is moderately slow in the Taylorsflat soil. Available water capacity is high (about 6.5 to 9.5 inches). The water-supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for rangeland, irrigated alfalfa, irrigated barley, building site development, or wildlife habitat.

The potential plant community on the Hiko Peak soil is about 45 percent perennial grasses, 15 percent forbs, and 40 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass.

The potential plant community on the Taylorsflat soil is about 50 percent perennial grasses, 15 percent forbs, and 35 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitations are low precipitation and the slope. Rock fragments in the surface layer are a limitation in areas of the Hiko Peak soil. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species. Because of the slope and the rock fragments, the use of specialized equipment is necessary.

This unit is suited to irrigated alfalfa hay, small grain, and pasture. Because of the slope, sprinkler irrigation systems are best suited. The rock fragments can hinder tillage. These soils are not suited to nonirrigated crops because of insufficient precipitation during the summer.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

This unit is well suited to roads and to building site development. The potential for frost action is a moderate limitation affecting roads on the Taylorsflat soil. The removal of rock fragments in disturbed areas is needed for landscaping.

The land capability classification of the Hiko Peak soil is IVe, irrigated, and VIs, nonirrigated. The range site is Semidesert Gravelly Loam (Wyoming Big Sagebrush) North. The land capability classification of the Taylorsflat soil is IIIe, irrigated, and VI, nonirrigated. The range site is Semidesert Loam (Wyoming Big Sagebrush).

25—Hiko Springs gravelly sandy loam, 2 to 4 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from igneous and sedimentary rocks. Slopes are medium in length and are convex. The present vegetation in most areas is Indian ricegrass, rabbitbrush, shadscale, and winterfat. Elevation is 5,700 to 6,000 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 51 to 53 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is pale brown gravelly sandy loam about 4 inches thick. The subsoil to a depth of 60 inches or more is very pale brown gravelly sandy loam. In some areas the surface layer and subsoil are sandy loam or gravelly loam.

Included with this soil in mapping are small areas of the loamy Tooele soils on fan remnants under shadscale, areas of silty soils in depressions under winterfat, and Cliffdown soils on ridges under shadscale and horsebrush. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderately rapid in the Hiko Springs soil. Available water capacity is moderate (about 5.0 to 5.5 inches). The water-supplying capacity is 3.5 to 5.0 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are Indian ricegrass, shadscale, winterfat, and bud sagebrush.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitation is low precipitation. Seeding is generally not recommended.

The land capability classification is VIIs, nonirrigated. The range site is Desert Sandy Loam (Shadscale).

26—Holmes very stony sandy loam, 5 to 15 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from sedimentary and igneous rocks. Slopes are medium in length and are convex. The present vegetation in most areas is mountain big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and black

sagebrush. Elevation is 6,200 to 7,500 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 40 to 43 degrees F, and the average frost-free period is 80 to 100 days.

Typically, the surface layer is dark brown very stony sandy loam about 10 inches thick. The upper 19 inches of the subsoil is brown and light brown very stony sandy clay loam, and the lower 8 inches is pink very stony sandy loam. The substratum to a depth of 60 inches or more is very pale brown extremely stony loamy coarse sand. In some areas the soil is bouldery, very gravelly, or very cobbly throughout.

Included with this soil in mapping are small areas of the cobbly Yeates Hollow soils on the upper fan remnants, the gravelly Springmeyer soils on the lower fan remnants, and the loamy Birdow soils in drainageways. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderate in the Holmes soil. Available water capacity is low (about 3 to 4 inches). The water-supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, bluegrass, mountain big sagebrush, and antelope bitterbrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is poor. Because of the rock fragments, the use of specialized equipment is necessary.

The land capability classification is VIs, nonirrigated. The range site is Upland Gravelly Loam (Mountain Big Sagebrush).

27—Izamatch-Cliffdown, alkali, complex, 2 to 8 percent slopes. This map unit is on lake terraces and fan remnants. Slopes are medium in length and are linear to convex. The present vegetation in most areas of the Izamatch soil is Indian ricegrass, shadscale, and horsebrush, and that in most areas of the Cliffdown soil is bud sagebrush, galleta, and shadscale. Elevation is 4,250 to 5,300 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 50 to 52 degrees F, and the average frost-free period is 130 to 150 days.

This unit is about 45 percent Izamatch gravelly sandy loam, 2 to 8 percent slopes, on lake terraces; 40 percent Cliffdown very gravelly sandy loam, alkali, 2 to 8 percent slopes, on fan remnants; and 15 percent other soils, Rock outcrop, and Badlands. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Izamatch soil is very deep and is somewhat excessively drained. It formed in lacustrine sediments and alluvium derived from mixed rock sources. Typically, the surface layer is light brownish gray gravelly sandy loam about 3 inches thick. The upper 7 inches of the subsoil is pale brown gravelly sandy loam. The next 20 inches is pale brown very gravelly loamy sand. The underlying material to a depth of 60 inches or more is pale brown very gravelly sand.

The Cliffdown soil is very deep and is somewhat excessively drained. It formed in alluvium derived dominantly from sedimentary rocks. Typically, the surface layer is light gray very gravelly sandy loam about 3 inches thick. The underlying material to a depth of 60 inches or more is very pale brown very gravelly sandy loam.

Included in mapping are small areas of the loamy Tooele soils on the lower fan remnants, the sandy Yenrab soils on stabilized sand dunes under Indian ricegrass and fourwing saltbush, and the stony to gravelly Hiko Peak soils on lake terraces under sagebrush. Also included are small areas of Badlands on terrace escarpments and a few small areas of Rock outcrop.

Permeability is rapid in the Izamatch soil. Available water capacity is low (about 2.5 to 3.5 inches). The water-supplying capacity is 3 to 4 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 0.5 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Permeability is moderately rapid in the Cliffdown soil. Available water capacity is low (about 2.0 to 3.5 inches). The water-supplying capacity is 2.5 to 4.0 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Izamatch soil is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are Indian ricegrass, shadscale, winterfat, and galleta.

The potential plant community on the Cliffdown soil is about 30 percent perennial grasses, 10 percent forbs, and 60 percent shrubs. Important plant species are bud sagebrush, galleta, and shadscale.

The suitability for livestock grazing is only fair because of low forage production.

The suitability for rangeland seeding is very poor. The main limitation is low precipitation. Seeding is generally not recommended.

The land capability classification is VIIs, nonirrigated. The range site for the Izamatch soil is Desert Gravelly Sandy Loam (Indian Ricegrass). The range site for the Cliffdown soil is Desert Alkali Bench (Bud Sagebrush).

28—Izamatch, alkali-Cliffdown complex, 2 to 15 percent slopes. This map unit is on lake terraces and fan remnants. Slopes are medium in length and are linear to convex. The present vegetation in most areas of the Izamatch soil is shadscale and bud sagebrush, and that in most areas of the Cliffdown soil is shadscale, Indian ricegrass, and horsebrush. Elevation is 4,250 to 5,300 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 50 to 52 degrees F, and the average frost-free period is 130 to 150 days.

This unit is about 60 percent Izamatch very gravelly sandy loam, alkali, 2 to 8 percent slopes, on lake terraces; 20 percent Cliffdown gravelly sandy loam, 2 to 15 percent slopes, on fan remnants; and 20 percent other soils, Badlands, and Rock outcrop. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Izamatch soil is very deep and is somewhat excessively drained. It formed in lacustrine sediments and alluvium derived dominantly from mixed rock sources. Typically, the surface layer is pale brown very gravelly sandy loam about 5 inches thick. The subsoil, to a depth of about 10 inches, is very pale brown very gravelly sandy loam. The underlying material to a depth of 60 inches or more is very pale brown very gravelly loamy sand.

The Cliffdown soil is very deep and is somewhat excessively drained. It formed in alluvium derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown gravelly sandy loam about 5 inches thick. The underlying material to a depth of 60 inches or more is very pale brown very gravelly sandy loam.

Included in mapping are small areas of the loamy Tooele soils on the lower fan remnants, the sandy Yenrab soils on stabilized sand dunes under Indian ricegrass and fourwing saltbush, Badlands on terrace escarpments, and a few small areas of Rock outcrop.

Permeability is rapid in the Izamatch soil. Available water capacity is very low or low (about 2 to 3 inches). The water-supplying capacity is 2.5 to 3.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 0.5 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

Permeability is moderately rapid in the Cliffdown soil. Available water capacity is low (about 3.0 to 4.5 inches). The water-supplying capacity is 2.5 to 4.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Izamatch soil is about 30 percent perennial grasses, 10 percent forbs, and 60 percent shrubs. Important plant species are galleta, bud sagebrush, and shadscale.

The potential plant community on the Cliffdown soil is about 40 percent perennial grasses, 5 percent forbs, and 55 percent shrubs. Important plant species are shadscale, galleta, bud sagebrush, and Indian ricegrass.

The suitability for livestock grazing is poor because of low forage production.

The suitability for rangeland seeding is very poor. The main limitation is low precipitation. Seeding is generally not recommended.

The land capability classification is VIIs, nonirrigated. The range site for the Izamatch soil is Desert Alkali Bench (Bud Sagebrush). The range site for the Cliffdown soil is Desert Gravelly Loam (Shadscale).

29—Jericho gravelly sandy loam, dry, 2 to 8 percent slopes. This well drained soil is on fan remnants. It is shallow over a duripan. It formed in alluvium derived dominantly from igneous rocks. Slopes are medium in length and are convex. The present vegetation in most areas is black sagebrush, rabbitbrush, Indian ricegrass, and shadscale. Elevation is 5,000 to 6,100 feet. The average annual precipitation is 8 to 10 inches, the mean annual air temperature is 46 to 50 degrees F, and the average frost-free period is 100 to 120 days.

Typically, the surface layer is pale brown gravelly sandy loam about 3 inches thick. The upper 6 inches of the subsoil is very pale brown gravelly sandy loam, and the lower 5 inches is very pale brown very gravelly sandy loam. A silica- and carbonate-cemented hardpan is between the depths of 14 and 19 inches. Below this to a depth of 60 inches or more is very pale brown extremely gravelly loamy coarse sand about 14 inches thick overlying stratified layers of silica- and carbonate-cemented hardpan and sand and gravel. In some areas the surface layer is gravelly loam or very gravelly sandy

loam. In other areas the depth to the hardpan is less than 14 inches.

Included with this soil in mapping are small areas of the loamy Scalade soils on fan remnants, the very deep Hiko Peak soils on the more sloping parts of fan remnants, and the loamy Medburn soils in drainageways. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately rapid in the Jericho soil. Available water capacity is very low (about 1.0 to 1.5 inches). The water-supplying capacity is 1.0 to 2.5 inches. Effective rooting depth is limited by the hardpan at a depth of 14 to 20 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are black sagebrush, Indian ricegrass, needleandthread, and winterfat.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation, the restricted rooting depth, and the available water capacity. Seeding is generally not recommended.

The land capability classification is VIIs, nonirrigated. The range site is Semidesert Shallow Hardpan 8-10 Ppt.

30—Junkett gravelly loam, 2 to 5 percent slopes. This well drained soil is on fan remnants. It is moderately deep over a petrocalcic horizon. It formed in alluvium derived dominantly from igneous and sedimentary rocks. Slopes are short or medium in length and are slightly convex. The present vegetation in most areas is Wyoming big sagebrush, Sandberg bluegrass, bluebunch wheatgrass, and rabbitbrush. Elevation is 5,900 to 6,300 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 130 days.

Typically, the surface layer is brown gravelly loam about 5 inches thick. The upper 11 inches of the subsoil is brown and light brown gravelly clay loam, and the lower 8 inches is very pale brown gravelly loam. A carbonate-cemented hardpan is between the depths of 24 and 30 inches. Below this to a depth of 60 inches or more is stratified very gravelly sandy loam, very gravelly loamy sand, and indurated hardpan. In some areas the surface layer is gravelly sandy loam. In other areas the lower part of the subsoil is gravelly sandy loam or very gravelly sandy loam.

Included with this soil in mapping are small areas of the very deep Hiko Peak soils on the lower fan remnants, Scalade soils on ridges, and the loamy Medburn soils in drainageways. Scalade soils are shallow over a hardpan. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Junkett soil. Available water capacity is low (about 3 to 4 inches). The water-supplying capacity is 5.0 to 6.5 inches. Effective rooting depth is limited by the hardpan at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 15 percent forbs, and 35 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is poor. The main limitations are low precipitation, the available water capacity, and the restricted rooting depth. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

The land capability classification is VIIs, nonirrigated. The range site is Semidesert Loam (Wyoming Big Sagebrush).

31—Kanosh loam, 0 to 2 percent slopes. This very deep, somewhat poorly drained soil is on low lake terraces. It formed in lacustrine sediments derived from mixed rock sources. Slopes are short or medium in length and are slightly convex to slightly concave. The present vegetation in most areas is inland saltgrass, alkali bluegrass, Nuttall alkaligrass, and tall green rabbitbrush. Elevation is 4,200 to 4,300 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 49 to 54 degrees F, and the average frost-free period is 140 to 180 days.

Typically, the surface layer is light brownish gray loam about 4 inches thick. The upper part of the subsoil is very pale brown loam about 4 inches thick. The next part is very pale brown and light gray fine sandy loam about 19 inches thick. The lower part of the subsoil to a depth of 60 inches or more is white fine sandy loam. In some areas, the surface layer is fine sandy loam or silt loam or the subsoil is silt loam.

Included with this soil in mapping are small areas of the well drained Manassa soils on lake terraces; the sandy Berent soils on stabilized sand dunes; the silty

Bramwell soils on low lake terraces; the poorly drained, saline Saltair soils on lake plains under pickleweed; and the poorly drained Logan soils in seeps and drainageways under inland saltgrass and rushes. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderately rapid in the Kanosh soil. Available water capacity is moderate (about 5.5 to 7.5 inches). Effective rooting depth is limited by a seasonal high water table at a depth of 3 feet from March through July. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Most areas are used as rangeland or for wildlife habitat. A few areas are used for irrigated crops or pasture.

The potential plant community is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are inland saltgrass, alkali sacaton, alkali bluegrass, basin wildrye, and sedge.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding adapted species.

The seasonal high water table and the content of salt and alkali limit the production of alfalfa hay, pasture, and grain. Salt and alkali can be leached by proper irrigation management and drainage. Wheel line or handline sprinklers are suitable irrigation systems. The design of irrigation systems should not exceed the intake rate of the soil. The hazard of wind erosion can be reduced by using a conservation tillage system.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated pasture can yield about 6 animal unit months per acre, and irrigated barley can yield about 80 bushels per acre.

The land capability classification is IIIw, irrigated, and VIIw, nonirrigated. The range site is Alkali Bottom (Alkali Sacaton).

32—Kanosh-Saltair-Logan complex, 0 to 2 percent slopes. This map unit is on low lake terraces, lake plains, and flood plains. Slopes are medium or long and are slightly convex to slightly concave. The present vegetation in most areas of the Kanosh soil is inland saltgrass, alkali bluegrass, Nuttall alkaligrass, and tall green rabbitbrush. The present vegetation in most areas of the Saltair soil is pickleweed and inland saltgrass. The present vegetation in most areas of the Logan soil is sedges, inland saltgrass, and rushes. The Saltair and Logan soils are subject to frequent flooding. Elevation is 4,200 to 4,300 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 54 degrees F, and the average frost-free period is 140 to 180 days.

This unit is about 45 percent Kanosh loam, 0 to 2 percent slopes, on slightly convex, low lake terraces; 20 percent Saltair silt loam, 0 to 1 percent slopes, on linear lake plains; 15 percent Logan silt loam, 0 to 1 percent slopes, in slightly concave drainageways; and 20 percent other soils and Playas. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Kanosh soil is very deep and is somewhat poorly drained. It formed in lacustrine sediments derived from mixed rock sources. Typically, the surface layer is light brownish gray loam about 4 inches thick. The upper part of the subsoil is very pale brown loam about 4 inches thick. The next part is very pale brown and light gray fine sandy loam about 19 inches thick. The lower part of the subsoil to a depth of 60 inches or more is white fine sandy loam. In some areas the surface layer is fine sandy loam or silt loam.

The Saltair soil is very deep and is poorly drained. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is very pale brown silt loam about 8 inches thick. The underlying material to a depth of 60 inches or more is white silt loam and silty clay loam. In some areas the surface layer is silty clay loam.

The Logan soil is very deep and is poorly drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is dark grayish brown and dark gray loam about 15 inches thick. The subsoil to a depth of 60 inches or more is gray and white silty clay loam.

Included in mapping are small areas of the well drained Manassa soils on lake terraces; the somewhat excessively drained Berent soils on stabilized sand dunes; the well drained Skumpah soils on low lake terraces under greasewood; the somewhat poorly drained, silty Bramwell soils on low lake terraces; Playas; and the somewhat excessively drained Dynal soils on oolitic dunes.

Permeability is moderately rapid in the Kanosh soil. Available water capacity is moderate (about 5.5 to 7.5 inches). Effective rooting depth is limited by a seasonal high water table at a depth of 1.5 to 3.5 feet from March through July. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Permeability is slow in the Saltair soil. Available

water capacity is very low or low (about 1 to 5 inches). Effective rooting depth is limited by a seasonal high water table at the surface to 1 foot below the surface from March through June. A high content of salt also limits rooting depth. The content of organic matter in the surface layer is less than 1 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate. This soil is frequently flooded during the spring.

Permeability is slow in the Logan soil. Available water capacity is very high (about 10 to 11 inches). Effective rooting depth is limited by a seasonal high water table at the surface to 2 feet below the surface from March through July. The content of organic matter in the surface layer is 4 to 8 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate. This soil is frequently flooded during the spring.

This unit is used mainly for rangeland or as wildlife habitat. Some areas are used for meadow hay or pasture.

The potential plant community on the Kanosh soil is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are inland saltgrass, alkali sacaton, alkali bluegrass, basin wildrye, and sedge.

The potential plant community on the Saltair soil is about 35 percent perennial grasses, 10 percent forbs, and 55 percent shrubs. Important plant species are pickleweed, inland saltgrass, Europe swampfire, and seepweed.

The potential plant community on the Logan soil is about 75 percent perennial grasses, 20 percent forbs, and 5 percent shrubs. Important plant species are alkali sacaton, rush, inland saltgrass, bulrush, Europe swampfire, and sedge.

The suitability for livestock grazing on the Kanosh and Logan soils is good. The suitability for livestock grazing on the Saltair soil is very poor because of low forage quality and low production.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding adapted species.

This unit is poorly suited to roads and to building site development. The main limitations are wetness and flooding.

The land capability classification of the Kanosh and Logan soils is VIIw, nonirrigated. The land capability classification of the Saltair soil is VIII. The range site for the Kanosh soil is Alkali Bottom (Alkali Sacaton), the range site for the Saltair soil is Desert Salty Silt (Pickleweed), and the range site for the Logan soil is Wet Saline Meadow.

33—Kapod gravelly loam, 2 to 10 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from sandstone and limestone. Slopes are medium in length and are convex. The vegetation in areas that are not cultivated is mainly mountain big sagebrush, bluebunch wheatgrass, mulesear dock, and Gambel oak. Elevation is 5,200 to 5,700 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 49 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is dark grayish brown and dark brown gravelly loam about 11 inches thick. The upper part of the subsoil is yellowish brown and light brown very cobbly clay loam about 19 inches thick. The lower part to a depth of 60 inches or more is very pale brown very cobbly sandy clay loam. In some areas the surface layer is loam or cobbly loam. In other areas, the upper part of the subsoil is gravelly clay loam or cobbly clay loam and the lower part is extremely gravelly sandy loam or extremely cobbly sandy loam. In some places along drainageways and on terrace breaks, the slopes are steeper. In other places the surface is gravelly to very cobbly.

Included with this soil in mapping are small areas of the loamy Birdow soils in drainageways, the cobbly Yeates Hollow soils on north-facing slopes, and the gravelly Lakewin soils on lake terraces. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderate in the Kapod soil. Available water capacity also is moderate (about 5 to 7 inches). The water-supplying capacity is 8 to 11 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used for irrigated and nonirrigated cropland, rangeland, building site development, or wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, bluegrass, and antelope bitterbrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. Because of the rock fragments in the surface layer, the use of specialized equipment is necessary.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, field corn, orchards, and pastures. Suitable irrigation systems include wheel line, handline, center pivot, and furrow. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion and conserve soil moisture. The soil is suited to nonirrigated crops. Soil moisture is too low for annual cropping. A suitable rotation is 1 year of small grain followed by 1 year of summer fallow or 8 to 10 years of alfalfa and 1 year of small grain. The gravel near the surface may limit tillage.

If good management practices are applied, irrigated barley can yield about 90 bushels per acre, nonirrigated winter wheat can yield about 25 bushels per acre, irrigated alfalfa can yield about 6 tons per acre, nonirrigated alfalfa can yield about 2 tons per acre, and irrigated pasture can yield about 7 animal unit months per acre.

If this unit is used for roads or for building site development, the main limitation is the stoniness. Topsoil should be stockpiled and used to reclaim areas disturbed during construction.

The land capability classification is IIIe, irrigated, and IVs, nonirrigated. The range site is Upland Gravelly Loam (Mountain Big Sagebrush).

34—Kapod stony loam, 5 to 30 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from sandstone and limestone. Slopes are medium in length and are linear to convex. The present vegetation in most areas is cheatgrass, threeawn, and bluebunch wheatgrass. Elevation is 4,600 to 5,200 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 49 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is dark grayish brown stony loam about 12 inches thick. The upper part of the subsoil is brown and yellowish brown very cobbly sandy clay loam about 14 inches thick. The lower part to a depth of 60 inches or more is light yellowish brown and very pale brown very cobbly sandy loam. In some areas the surface layer is very cobbly loam or very stony loam. In other areas the subsoil is very stony loam.

Included with this soil in mapping are small areas of the gravelly Lakewin soils on lake terraces, the loamy Birdow soils in drainageways, and the cobbly Yeates Hollow soils on north-facing slopes. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderate in the Kapod soil. Available water capacity also is moderate (about 4.5 to 6.0 inches). The water-supplying capacity is 7.5 to 10.0 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used as rangeland (fig. 14) or for wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, bluegrass, and antelope bitterbrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. Because of the rock fragments, the use of specialized equipment is necessary.

The land capability classification is VIs, nonirrigated. The range site is Upland Gravelly Loam (Mountain Big Sagebrush).

35—Kapod very cobbly loam, 5 to 30 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from sandstone and limestone. Slopes are medium in length and are linear to convex. The present vegetation in most areas is Utah juniper, mountain big sagebrush, bitterbrush, and bluebunch wheatgrass. Elevation is 5,000 to 6,500 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 49 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is dark grayish brown very cobbly loam about 11 inches thick. The upper part of the subsoil is brown and light yellowish brown very cobbly sandy clay loam about 14 inches thick. The lower part to a depth of 60 inches or more is very pale brown very cobbly sandy loam. In some areas the subsoil is very cobbly loam.

Included with this soil in mapping are small areas of the loamy Birdow soils in drainageways, the shallow Lodar soils on ridges, the cobbly Yeates Hollow soils on the upper fan remnants, and Borvant soils on the lower fan remnants. Borvant soils are shallow to a hardpan. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderate in the Kapod soil. Available water capacity is low or moderate (about 4.0 to 5.5 inches). The water-supplying capacity is 7 to 9 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

Figure 14.—Rangeland in an area of Kapod stony loam, 5 to 30 percent slopes, in Tooele Valley. The Oquirrh Mountains are in the background.

This unit is used as rangeland or woodland or for wildlife habitat.

The potential plant community is an overstory of pinyon and Utah juniper with about 50 percent canopy cover. The understory is about 45 percent perennial grasses, 5 percent forbs, and 50 percent shrubs. Important plant species are mountain big sagebrush, black sagebrush, bluebunch wheatgrass, bluegrass, and antelope bitterbrush.

The site index for pinyon and Utah juniper is 65. Average productivity is low. Average yields are about 2 to 4 cords of wood per acre. The potential for production of posts or Christmas trees is poor.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is poor. The main limitations are the slope and the rock fragments. The use of specialized equipment is necessary.

The land capability classification is VIs, nonirrigated. The woodland site is Upland Stony Loam (Pinyon-Utah Juniper).

36—Kilburn gravelly sandy loam, 2 to 10 percent slopes. This very deep, somewhat excessively drained soil is on fan remnants and lake terraces. It formed in alluvium and colluvium derived dominantly from gneiss, schist, and quartzite. Slopes are short or medium in length and are convex. The present vegetation in most areas is cheatgrass, threeawn, foxtail fescue, and sand dropseed. Elevation is 4,250 to 4,500 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 160 to 180 days.

Typically, the surface layer is grayish brown gravelly sandy loam about 19 inches thick. The subsoil is pale brown very gravelly sandy loam about 17 inches thick. The substratum to a depth of 60 inches or more is pale brown very gravelly loamy sand and very cobbly loamy sand. In some areas the surface layer is sandy loam, stony sandy loam, or very stony sandy loam.

Included with this soil in mapping are small areas of the sandy Wasatch soils on the more sloping fan remnants, the moderately deep Ridd soils on hillsides, the loamy Birdow soils in depressions, and very deep, loamy soils in drainageways under bigtooth maple. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderately rapid in the Kilburn soil. Available water capacity is low (about 3 to 4 inches). The water-supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, bluegrass, and antelope bitterbrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is poor. The main limitation is the available water capacity. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

The land capability classification is VIs, nonirrigated. The range site is Upland Gravelly Loam (Mountain Big Sagebrush).

37—Lakewin gravelly loam, 1 to 5 percent slopes. This very deep, well drained soil is on lake terraces. It formed in alluvium and lacustrine sediments derived dominantly from quartzite and limestone. Slopes are medium in length and are convex. The vegetation in areas that are not cultivated is mainly bluebunch wheatgrass, cheatgrass, mountain big sagebrush, and rabbitbrush. Elevation is 4,700 to 5,200 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 46 to 52 degrees F, and the average frost-free period is 140 to 170 days.

Typically, the surface layer is dark grayish brown gravelly loam about 7 inches thick. The upper part of the subsoil is brown gravelly sandy clay loam about 11 inches thick. The next part is pale brown very gravelly sandy loam about 12 inches thick. The lower part to a depth of 60 inches or more is pale brown very gravelly sand. In some areas the surface layer is loam, sandy loam, gravelly sandy loam, or very gravelly sandy loam.

Included with this soil in mapping are small areas of the loamy Birdow soils along drainageways, the silty Erda soils, the gravelly Abela soils, the stony Kapod soils on fan remnants, and the sandy Wasatch soils. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderately rapid in the Lakewin soil. Available water capacity is low (about 3.5 to 5.0 inches). The water-supplying capacity is 7.0 to 8.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used as rangeland; for wildlife habitat; for irrigated and nonirrigated grain, alfalfa, or pasture; or for urban development.

The potential plant community is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, bluegrass, and antelope bitterbrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitations are the available water capacity and the rock fragments. The suitability for seeding can be improved by using special techniques for seedbed preparation, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, field corn, orchards, and pastures. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, and furrow. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the

surface and using a conservation tillage system help to control wind erosion and water erosion and conserve soil moisture. The soil is suited to nonirrigated crops. Soil moisture is too low for annual cropping. A suitable rotation is 1 year of small grain followed by 1 year of summer fallow or 8 to 10 years of alfalfa and 1 year of small grain. The gravel near the surface may limit tillage.

If good management practices are applied, nonirrigated winter wheat can yield about 25 bushels per acre and nonirrigated alfalfa can yield about 2 tons per acre. Irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 90 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

If this soil is used for building site development, the main limitation is a poor filtering capacity, which affects septic tank absorption fields. The potential for frost action is a moderate limitation on sites for roads.

The land capability classification is IVs, irrigated, and VIs, nonirrigated. The range site is Upland Gravelly Loam (Mountain Big Sagebrush).

38—Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes. This map unit is on mountainsides. Slopes are short or medium in length and are convex. The present vegetation in most areas of the Lodar soil is bluebunch wheatgrass, Utah juniper, pinyon, black sagebrush, and cliffrose. The present vegetation in most areas of the Lundy soil is bluebunch wheatgrass, pinyon, Rocky Mountain juniper, curlleaf mountainmahogany, and snowberry. Elevation is 6,000 to 8,000 feet. The average annual precipitation is 12 to 18 inches, the mean annual air temperature is 40 to 50 degrees F, and the average frost-free period is 80 to 120 days.

This unit is 40 percent Lodar very cobbly loam, 30 to 60 percent slopes, mainly on the drier south-facing slopes; 30 percent Lundy very cobbly loam, 30 to 60 percent slopes, mainly on moist north-facing slopes; 10 percent Rock outcrop on ridges and escarpments; and 20 percent other soils.

The Lodar soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is brown very cobbly loam about 8 inches thick. The subsoil is pale brown very cobbly loam. Fractured limestone bedrock is at a depth of about 16 inches. In some areas the surface layer and subsoil are very stony loam or very gravelly loam.

The Lundy soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is brown very cobbly loam about 11 inches thick. The subsoil is yellowish brown very cobbly loam. Fractured limestone bedrock is at a depth of about 18 inches. In some areas the surface layer and subsoil are very stony loam or very gravelly loam.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the very deep Abela soils in drainageways, the moderately deep Dateman soils on north-facing slopes under fir trees, the moderately deep Podmor soils on mountainsides under mountain big sagebrush, and the moderately deep Cristo soils.

Permeability is moderate in the Lodar soil. Available water capacity is very low (about 1 to 2 inches). The water-supplying capacity is 2 to 5 inches. Effective rooting depth is limited by bedrock at a depth of 10 to 20 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderate in the Lundy soil. Available water capacity is very low (about 1 to 2 inches). The water-supplying capacity is 2 to 5 inches. Effective rooting depth is limited by bedrock at a depth of 10 to 20 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat. In a few areas the juniper and pinyon trees are used for firewood, fence posts, or Christmas trees.

The potential plant community on the Lodar soil is an overstory of pinyon and Utah juniper with about 50 percent canopy cover. The understory is about 55 percent perennial grasses, 5 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, low sagebrush, bluegrass, and antelope bitterbrush.

The potential plant community on the Lundy soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, low sagebrush, bluegrass, and antelope bitterbrush.

The site index for pinyon and Utah juniper is 40 on the Lodar soil. Average productivity is low. Average yields are about 1 to 2 cords of wood per acre. The potential for production of posts or Christmas trees is poor.

The suitability for livestock grazing is poor because of the slope.

The suitability for rangeland seeding is very poor. The main limitations are the slope, the restricted rooting depth, and rock fragments. Seeding is generally not recommended.

The land capability classification of the Lodar and Lundy soils is VIIe, nonirrigated. The woodland site for the Lodar soil is Upland Shallow Loam (Pinyon-Utah Juniper). The range site for the Lundy soil is Mountain Shallow Loam (Low Sagebrush). The land capability classification of the Rock outcrop is VIII. No woodland site or range site is assigned for the Rock outcrop.

39—Logan silt loam, 0 to 1 percent slopes. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slopes are medium in length and are linear or slightly concave. The present vegetation in most areas is sedges, inland saltgrass, and rushes. Elevation is 4,200 to 5,500 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 46 to 51 degrees F, and the average frost-free period is 110 to 160 days.

Typically, the surface layer is dark grayish brown and dark gray silt loam about 15 inches thick. The subsoil to a depth of 60 inches or more is gray and white silty clay loam. In some areas the underlying material is silt loam or silty clay. In other areas the soil is sandy loam.

Included with this soil in mapping are small areas of the somewhat poorly drained Bramwell soils and the well drained Birdow soils. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is slow in the Logan soil. Available water capacity is very high (about 10 to 11 inches). Effective rooting depth is limited by a seasonal high water table at the surface to 2 feet below the surface from March through July. The content of organic matter in the surface layer is 4 to 8 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate. This soil is frequently flooded during the spring.

This unit is used mainly for meadow hay, pasture, or wildlife habitat.

The potential plant community is about 75 percent perennial grasses, 20 percent forbs, and 5 percent shrubs. Important plant species are alkali sacaton, rush, inland saltgrass, bulrush, sedge, and swampfire.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is very poor. The main limitation is the content of salt and alkali. Plants that tolerate wetness should be seeded.

This unit is poorly suited to cropland unless it is drained and irrigated. The main limitations are the seasonal high water table and the frequent flooding. If the soil is used for meadow hay or pasture, grasses that are adapted to wetness should be planted.

The land capability classification is VIIw, nonirrigated. The range site is Wet Saline Meadow.

40—Lundy-Dateman-Rock outcrop association, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are short or medium in length and are convex. The present vegetation in most areas of the Lundy soil is low sagebrush, bluebunch wheatgrass, bitterbrush, and bluegrass. The present vegetation in most areas of the Dateman soil is Douglas-fir, white fir, mountain brome, snowberry, and aspen. Elevation is 6,000 to 8,500 feet. The average annual precipitation is 16 to 35 inches, the mean annual air temperature is 35 to 45 degrees F, and the average frost-free period is 70 to 90 days.

This unit is about 45 percent Lundy very cobbly loam, 30 to 60 percent slopes, on south-, east-, and west-facing slopes; 25 percent Dateman gravelly loam, 30 to 70 percent slopes, on north-facing slopes; 10 percent Rock outcrop; and 20 percent other soils.

The Lundy soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is brown very cobbly loam about 11 inches thick. The subsoil is yellowish brown very cobbly loam. Fractured limestone bedrock is at a depth of about 18 inches. In some areas slopes are less than 30 percent. In places the soil is extremely cobbly loam or extremely stony loam.

The Dateman soil is moderately deep and is well drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface is covered with a mat of partly decomposed needles, leaves, and twigs. This mat is about 1 inch thick. The surface layer is very dark grayish brown and dark brown gravelly loam about 22 inches thick. The subsoil is brown very cobbly loam. Fractured limestone bedrock is at a depth of about 36 inches. In some areas bedrock is at a depth of more than 40 inches. In other areas slopes are less than 30 percent.

Rock outcrop consists of exposures of barren limestone on escarpments and ridges.

Included in mapping are small areas of the moderately deep Podmor soils in slightly concave positions under mountain big sagebrush and the very deep Flygare soils on the upper parts of slopes under quaking aspen. Also included are very deep, gravelly soils in drainageways under mountain big sagebrush, maple, and oak.

Permeability is moderate in the Lundy soil. Available water capacity is very low (about 1 to 2 inches). The water-supplying capacity is 2 to 5 inches. Effective rooting depth is limited by bedrock at a depth of 10 to 20 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderate in the Dateman soil.

Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 8 to 14 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or woodland or for wildlife habitat.

The potential plant community on the Lundy soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, low sagebrush, bluegrass, and antelope bitterbrush.

The potential plant community on the Dateman soil is an overstory of Douglas-fir and white fir with about 60 percent canopy cover. The understory vegetation is about 45 percent perennial grasses, 20 percent forbs, and 35 percent shrubs. Important plant species are Oregongrape, sheep fescue, bluegrass, and mountain brome.

The site index for Douglas-fir is 65 on the Dateman soil, and the site index for white fir is 60. The suitability for harvesting wood products is poor because of the slope and the severe hazard of erosion. The potential for production of Christmas trees is fair.

The suitability for livestock grazing is poor because of the slope. Forage production is low on the Dateman soil.

The suitability for rangeland seeding is very poor. The main limitations are the slope, the restricted rooting depth, and rock fragments. Seeding is generally not recommended.

The land capability classification of the Lundy and Dateman soils is VIIe, nonirrigated. The range site for the Lundy soil is Mountain Shallow Loam (Low Sagebrush). The woodland site for the Dateman soil is High Mountain Stony Loam (Conifer). The land capability classification of the Rock outcrop is VIII. No woodland site or range site is assigned for the Rock outcrop.

41—Manassa silt loam, 0 to 3 percent slopes. This very deep, well drained soil is on fan remnants and lake terraces. It formed in alluvium and lacustrine sediments derived dominantly from limestone and sandstone. Slopes are medium in length and are linear or slightly convex. The present vegetation in most areas is cheatgrass, crested wheatgrass, Wyoming big sagebrush, and bluebunch wheatgrass. Elevation is 4,250 to 4,800 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 140 to 180 days.

Typically, the surface layer is light brownish gray silt loam about 12 inches thick. The upper part of the underlying material is very pale brown silt loam about 11 inches thick. The next part is very pale brown silty clay loam about 13 inches thick. The lower part to a depth of 60 inches or more is white silty clay loam. In some areas the surface layer is loam or silty clay loam.

Included with this soil in mapping are small areas of the gravelly Hiko Peak soils on ridges, the loamy Medburn soils in outwash areas, the loamy Taylorsflat soils in landscape positions similar to those of the Manassa soil, and the somewhat poorly drained Bramwell soils in depressional areas. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is slow in the Manassa soil. Available water capacity is moderate or high (about 6 to 10 inches). The water-supplying capacity is 6.5 to 9.0 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for rangeland, irrigated small grain, irrigated alfalfa, irrigated pasture, building site development, or wildlife habitat.

The potential plant community is about 30 percent perennial grasses, 15 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is poor. The main limitation is low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

This soil is suited to irrigated crops if the content of salt and alkali is reduced by incorporating a minimum leaching program. Suitable crops are small grain, alfalfa hay, field corn, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers and furrow flood systems. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion. This soil is not suited to nonirrigated crops because of low precipitation.

If good management practices are applied, irrigated alfalfa can yield about 7 tons per acre, irrigated barley can yield about 90 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

If this soil is used for roads or for building site development, the main limitations are a slow percolation rate, the shrink-swell potential, and the potential for frost action. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has a low shrink-swell potential. Maintaining drainage channels helps to control spring runoff.

The land capability classification is IIIe, irrigated, and VIs, nonirrigated. The range site is Semidesert Alkali Loam (Black Greasewood).

42—Medburn fine sandy loam, 2 to 8 percent slopes. This very deep, well drained soil is on lake terraces and fan remnants. It formed in alluvium and lacustrine sediments derived dominantly from sedimentary rocks. Slopes are short or medium in length and are convex to linear. The present vegetation in most areas is Wyoming big sagebrush, cheatgrass, Douglas rabbitbrush, and Indian ricegrass. Elevation is 4,500 to 5,800 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 46 to 50 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is pale brown fine sandy loam about 4 inches thick. The subsoil is light yellowish brown fine sandy loam about 37 inches thick. The substratum to a depth of 60 inches or more is very pale brown fine sandy loam. In some areas the surface layer is very fine sandy loam or sandy loam.

Included with this soil in mapping are small areas of the gravelly Hiko Peak soils on ridges, the loamy Taylorsflat soils in landscape positions similar to those of the Medburn soil, and the sandy Berent soils on stabilized sand dunes. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderately rapid in the Medburn soil. Available water capacity is moderate (about 5 to 7 inches). The water-supplying capacity is 5 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used for rangeland (fig. 15), irrigated alfalfa, irrigated barley, irrigated pasture, or wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 15 percent forbs, and 35 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is poor. The main limitation is low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 90 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

This unit is well suited to building site development. The potential for frost action is a moderate limitation affecting roads.

The land capability classification is IIIe, irrigated, and VIIs, nonirrigated. The range site is Semidesert Loam (Wyoming Big Sagebrush).

43—Medburn fine sandy loam, saline, 2 to 4 percent slopes. This very deep, well drained soil is on lake terraces and fan remnants. It formed in alluvium and lacustrine sediments derived dominantly from sedimentary rocks. Slopes are short or medium in length and are slightly convex or linear. The present vegetation in most areas is black greasewood, shadscale, bottlebrush squirreltail, spiny horsebrush, and seepweed. Elevation is 4,500 to 5,800 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 46 to 50 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is pale brown fine sandy loam about 8 inches thick. The subsoil is light yellowish brown fine sandy loam about 38 inches thick. The substratum to a depth of 60 inches or more is light yellowish brown fine sandy loam. In some areas the surface layer is very fine sandy loam or silt loam.

Included with this soil in mapping are small areas of the gravelly Hiko Peak soils along drainageways under Wyoming big sagebrush and the loamy Taylorsflat soils in landscape positions similar to those of the Medburn soil. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderately rapid in the Medburn soil. Available water capacity is low or moderate (about 4 to 6 inches). The water-supplying capacity is 4.5 to 7.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1

Figure 15.—Crested wheatgrass in an area of Medburn fine sandy loam, 2 to 8 percent slopes, used as rangeland. The Cedar Mountains are in the background.

to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for rangeland, irrigated alfalfa, irrigated barley, irrigated pasture, or wildlife habitat.

The potential plant community is about 30 percent perennial grasses, 15 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. The suitability for seeding can be improved by using special techniques and adapted species.

This unit is suited to irrigated crops if the content of salt and alkali is reduced by incorporating a minimum leaching program. Suitable crops are small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 90 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

This unit is well suited to building site development. The potential for frost action is a moderate limitation affecting roads.

The land capability classification is IVs, irrigated, and VIIs, nonirrigated. The range site is Semidesert Alkali Loam (Black Greasewood).

44—Pits. Pits consist of open excavations from which soil and the underlying material have been removed for road construction, municipal uses, or other purposes. Pits are generally located in gravelly and sandy soils. Some sites have been excavated to bedrock. The sides of the Pits are steep. The material that remains supports few plants and has no value for farming. Pits are generally not suited to rangeland, but some areas have value for wildlife habitat or industrial uses.

The land capability classification is VIII.

45—Playas. Playas consist of barren, undrained basins that are subject to repeated inundation by water and salinization by evaporation of accumulated water. They are on lake plains. Many areas are commonly ponded in the spring. The surface is smooth, commonly has a thin covering of salt crystals, and is patterned by cracks when dry. The soil materials are strongly calcareous, stratified lacustrine sediments of silt, clay, and sand containing sufficient amounts of salt to prohibit the growth of vegetation.

Included in mapping are small areas of the poorly drained Saltair soils on lake plains under pickleweed, the somewhat excessively drained Dynal soils on stabilized sand dunes, the well drained Skumpah soils on low lake terraces under greasewood, and Salt flats. Included areas make up about 10 percent of the total acreage of this unit.

Playas are not suitable for rangeland. A few areas are used as solar evaporation ponds.

The land capability classification is VIII.

46—Playas-Saltair complex, 0 to 1 percent slopes. This map unit is on lake plains. Slopes are long and linear. Playas are in depressions. They are mostly barren. The present vegetation in most areas of the Saltair soil is pickleweed and inland saltgrass. Elevation is 4,200 to 4,300 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit is about 60 percent Playas; 30 percent Saltair silt loam, 0 to 1 percent slopes; and 10 percent other soils and Salt flats. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used (fig. 16).

Playas consist of barren, undrained basins. The surface is covered with a thin layer of salt and is patterned with cracks when dry. Many areas are commonly ponded in the spring. The soil material is stratified lacustrine sediments of silt loam, silty clay loam, and sandy loam.

The Saltair soil is very deep and is poorly drained. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is very pale brown silt loam about 8 inches thick. The underlying material to a depth of 60 inches or more is white silt loam and silty clay loam. In some areas the surface layer is silty clay loam or sandy loam.

Included in mapping are small areas of the well drained Skumpah soils on low lake terraces under shadscale and greasewood; Salt flats; and the sandy Dynal soils on stabilized oolitic dunes under greasewood and saltbush. Included areas make up about 10 percent of the total acreage of this unit.

Permeability is slow in the Saltair soil. Available water capacity is very low or low (about 1 to 5 inches). The content of organic matter in the surface layer is less than 1 percent. Effective rooting depth is limited by a seasonal high water table at the surface to 1 foot below the surface from March through October. A high content of salt also limits the effective rooting depth. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate. This soil is frequently flooded during the spring.

This unit is used as a military bombing range. A few areas are used as a source of salt from solar evaporation ponds.

The potential plant community on the Saltair soil is about 35 percent perennial grasses, 10 percent forbs, and 55 percent shrubs. Important plant species are

Figure 16.—An area of Playas-Saltair complex, 0 to 1 percent slopes, in Skull Valley. The Stansbury Mountains are in the background.

pickleweed, inland saltgrass, Europe swampfire, and seepweed.

The suitability for livestock grazing is very poor because of low forage quality and low production.

This unit is not suitable for rangeland seeding because of the content of salt and alkali.

This unit is not suited to recreational uses or homesite development, mainly because of wetness and the flooding. It has some potential for solar evaporation ponds.

The land capability classification is VIII. The range site of the Saltair soil is Desert Salty Silt (Pickleweed). No range site is assigned for the Playas.

46A—Podmor, moist-Dateman-Rock outcrop association, 30 to 70 percent slopes. This map unit is on mountainsides. Slopes are short or medium in length and are convex. The present vegetation in most areas of the Podmor soil is Gambel oak, bluebunch wheatgrass, mountain big sagebrush, snowberry, and

bluegrass. The present vegetation in most areas of the Dateman soil is Douglas-fir, white fir, mountain brome, snowberry, and quaking aspen. Elevation is 6,000 to 10,000 feet. The average annual precipitation is 18 to 35 inches, the mean annual air temperature is 35 to 45 degrees F, and the average frost-free period is 70 to 90 days.

This unit is about 60 percent Podmor very cobbly loam, moist, 30 to 60 percent slopes, mainly on south-, east-, and west-facing slopes; 20 percent Dateman gravelly loam, 30 to 70 percent slopes, mainly on north-facing slopes; 10 percent Rock outcrop; and 10 percent other soils.

The Podmor soil is moderately deep and is well drained. It formed in residuum and colluvium derived dominantly from quartzite and sandstone. Typically, the upper part of the surface layer is brown very cobbly loam about 3 inches thick. The lower part is brown very gravelly loam about 13 inches thick. The subsoil is brown very cobbly loam. Fractured quartzite bedrock is at a depth of about 23 inches.

The Dateman soil is moderately deep and is well drained. It formed in residuum and colluvium derived dominantly from limestone and sandstone. Typically, the surface is covered with a mat of partly decomposed needles, leaves, and twigs. This mat is about 1 inch thick. The surface layer is very dark grayish brown and dark brown gravelly loam about 22 inches thick. The subsoil is brown very cobbly loam. Fractured limestone bedrock is at a depth of about 36 inches. In some areas fractured bedrock is at a depth of more than 40 inches.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the shallow Lundy soils on side slopes under curlleaf mountainmahogany; the shallow Onaqui soils on ridges under low sagebrush; the very deep Flygare soils on the higher or north-facing slopes under aspen; and very deep, loamy soils in drainageways under bigtooth maple, chokecherry, and willows.

Permeability is moderate in the Podmor soil. Available water capacity is low (about 1.5 to 2.5 inches). The water-supplying capacity is 6 to 9 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderate in the Dateman soil. Available water capacity is low. The water-supplying capacity is 8 to 14 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Podmor soil is about 35 percent perennial grasses, 10 percent forbs, and 55 percent shrubs. Important plant species are Gambel oak, bearded wheatgrass, bluebunch wheatgrass, and mountain big sagebrush.

The potential plant community on the Dateman soil is an overstory of Douglas-fir and white fir with about 60 percent canopy cover. The understory vegetation is about 45 percent perennial grasses, 20 percent forbs, and 35 percent shrubs. Important plant species are Oregongrape, sheep fescue, bluegrass, and mountain brome.

The site index for Douglas-fir is 65 on the Dateman soil, and the site index for white fir is 60. The suitability for harvesting wood products is poor because of the slope and the severe hazard of erosion. The potential for production of Christmas trees is fair.

The suitability for livestock grazing is poor because of the slope. Forage production is low on the Dateman soil.

The suitability for rangeland seeding is very poor. The main limitations are the slope and rock fragments. Seeding is not recommended.

The land capability classification of the Podmor and Dateman soils is VIIe. The range site for the Podmor soil is Mountain Gravelly Loam (Oak). The woodland site for the Dateman soil is High Mountain Stony Loam (Conifer). The land capability classification of the Rock outcrop is VIII. No woodland site or range site is assigned for the Rock outcrop.

47—Podmor-Onaqui-Rock outcrop association, 20 to 60 percent slopes. This map unit is on mountainsides and ridges. Slopes are short or medium in length and are convex. The present vegetation in most areas of the Podmor soil is mountain big sagebrush, snowberry, bluebunch wheatgrass, and arrowleaf balsamroot. The present vegetation in most areas of the Onaqui soil is low sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and phlox. Elevation is 7,000 to 10,000 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 40 to 45 degrees F, and the average frost-free period is 70 to 90 days.

This unit is about 45 percent Podmor very cobbly loam, 30 to 60 percent slopes, on mountainsides; 35 percent Onaqui very cobbly loam, 20 to 60 percent slopes, on ridges; 10 percent Rock outcrop; and 10 percent other soils and talus. In areas in the Stansbury Mountains, the Rock outcrop makes up a higher percentage of the map unit.

The Podmor soil is moderately deep and is well

drained. It formed in colluvium and residuum derived dominantly from quartzite. Typically, the upper part of the surface layer is brown very cobbly loam about 3 inches thick. The lower part is brown very gravelly loam about 13 inches thick. The subsoil is brown very cobbly loam. Fractured quartzite bedrock is at a depth of about 23 inches. In some areas the soil is very gravelly loam, very stony loam, or extremely cobbly loam throughout.

The Onaqui soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from quartzite. Typically, the upper part of the surface layer is dark brown very cobbly loam about 4 inches thick. The lower part is brown extremely cobbly loam about 11 inches thick. Fractured quartzite bedrock is at a depth of about 15 inches. In some areas the soil is very gravelly loam, very stony loam, or extremely cobbly loam throughout.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of talus slopes in very steep colluvial areas; the very deep Flygare soils on the upper south-, east-, and west-facing slopes under quaking aspen; the moderately deep Dateman soils on north-facing slopes under fir trees; and very deep, loamy soils in drainageways under bigtooth maple, chokecherry, and willows.

Permeability is moderate in the Podmor soil. Available water capacity is very low (about 1.5 to 2.5 inches). The water-supplying capacity is 5 to 8 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderate in the Onaqui soil. Available water capacity is very low (about 0.5 inch to 1.5 inches). The water-supplying capacity is 1.5 to 5.0 inches. Effective rooting depth is limited by bedrock at a depth of 10 to 20 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Podmor soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, bulbous oniongrass, antelope bitterbrush, and mountain big sagebrush.

The potential plant community on the Onaqui soil is about 40 percent perennial grasses, 25 percent forbs, and 35 percent shrubs. Important plant species are low sagebrush, bluebunch wheatgrass, Idaho fescue, and Douglas rabbitbrush.

The suitability for livestock grazing is poor because of the slope. Forage production is low on the Onaqui soil.

The suitability for rangeland seeding is very poor. The main limitations are the slope and rock fragments. Seeding is generally not recommended.

The land capability classification of the Podmor and Onaqui soils is VIIe, nonirrigated. The range site for the Podmor soil is Mountain Stony Loam (Antelope Bitterbrush). The range site for the Onaqui soil is Mountain Windswept Ridge. The land capability classification of the Rock outcrop is VIII. No woodland site or range site is assigned for the Rock outcrop.

48—Reywat-Broad-Rock outcrop association, 30 to 60 percent slopes. This map unit is on hillsides and mountainsides. Slopes are short or medium in length and are convex. The present vegetation in most areas of the Reywat soil is bluebunch wheatgrass, Utah juniper, and black sagebrush. The present vegetation in most areas of the Broad soil is bluebunch wheatgrass, mountain big sagebrush, arrowleaf balsamroot, birchleaf mountainmahogany, and serviceberry. Elevation is 5,200 to 7,200 feet. The average annual precipitation is 12 to 17 inches, the mean annual air temperature is 42 to 50 degrees F, and the average frost-free period is 80 to 120 days.

This unit is about 45 percent Reywat very cobbly loam, 30 to 60 percent slopes, mainly on droughty south aspects; 30 percent Broad cobbly loam, 30 to 60 percent slopes, mainly on the more moist north aspects; 10 percent Rock outcrop; and 15 percent other soils.

The Reywat soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from quartzite and igneous rocks. Typically, the surface layer is grayish brown very cobbly loam about 2 inches thick. The upper 2 inches of the subsoil is grayish brown very gravelly clay loam, and the lower 7 inches is brown very gravelly clay loam. Fractured quartzite bedrock is at a depth of about 11 inches. In some areas the surface layer is very gravelly sandy loam.

The Broad soil is moderately deep and is well drained. It formed in residuum and colluvium derived dominantly from quartzite and sandstone. Typically, the surface layer is dark brown and brown cobbly loam about 14 inches thick. The upper 9 inches of the subsoil is yellowish brown very gravelly clay loam, and the lower 13 inches is pale brown very cobbly loam. Fractured quartzite bedrock is at a depth of about 36 inches. In some areas the surface layer is very gravelly loam or very cobbly loam. In other areas bedrock is at a depth of more than 40 inches.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the very deep

Abela soils in drainageways, the shallow Lodar soils in landscape positions similar to those of the Reywat soil, and the shallow Lundy soils in landscape positions similar to those of the Broad soil.

Permeability is moderately slow in the Reywat soil. Available water capacity is very low (about 1.0 to 1.5 inches). The water-supplying capacity is 2.0 to 3.5 inches. Effective rooting depth is limited by bedrock at a depth of 10 to 20 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Permeability is moderately slow in the Broad soil. Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 7.0 to 9.5 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 3 to 5 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Reywat soil is an overstory of pinyon and Utah juniper with about 30 percent canopy cover. The understory is about 55 percent perennial grasses, 5 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, Indian ricegrass, black sagebrush, bluegrass, and antelope bitterbrush.

The potential plant community on the Broad soil is about 65 percent perennial grasses, 10 percent forbs, and 25 percent shrubs. Important plant species are bluebunch wheatgrass, bulbous oniongrass, antelope bitterbrush, and mountain big sagebrush.

The site index for pinyon and Utah juniper is about 40 on the Reywat soil. Average productivity is low. Average yields are 1 to 2 cords of wood per acre. The potential for production of fence posts and Christmas trees is poor.

The suitability for livestock grazing is poor because of the slope.

The suitability for rangeland seeding is very poor. The main limitations are the slope, rock fragments, and the restricted rooting depth. Seeding is generally not recommended.

The land capability classification of the Reywat and Broad soils is VIIe, nonirrigated. The woodland site for the Reywat soil is Upland Shallow Loam (Pinyon-Utah Juniper). The range site for the Broad soil is Mountain Stony Loam (Antelope Bitterbrush). The land capability classification of the Rock outcrop is VIII. No woodland site or range site is assigned for the Rock outcrop.

49—Ridd-Rock outcrop complex, 30 to 70 percent slopes. This map unit is on hillsides and mountainsides. Slopes are short and convex. The present vegetation in most areas is cheatgrass, foxtail fescue, sand dropseed, and threeawn. Elevation is 5,200 to 6,500 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 51 degrees F, and the average frost-free period is 140 to 180 days.

This unit is about 70 percent Ridd very stony sandy loam, 30 to 70 percent slopes; 15 percent Rock outcrop; and 15 percent other soils and talus. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Ridd soil is moderately deep and is well drained. It formed in residuum and colluvium derived dominantly from gneiss, schist, and quartzite. Typically, the surface layer is brown very stony sandy loam about 13 inches thick. The subsoil is yellowish brown very stony sandy loam about 9 inches thick. The substratum is pale brown and light olive brown very stony sandy loam. Fractured quartzite bedrock is at a depth of about 36 inches. In some areas the surface layer and subsoil are very gravelly sandy loam or very cobbly sandy loam. In other areas the depth to bedrock is more than 40 inches. In places the subsoil is very stony sandy clay loam.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the very deep, sandy Wasatch soils on fan remnants; the shallow Reywat soils on south-facing mountainsides; and talus slopes in the more sloping areas.

Permeability is moderate in the Ridd soil. Available water capacity is very low (about 2.0 to 2.5 inches). The water-supplying capacity is 4.5 to 6.0 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Ridd soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass.

The suitability for livestock grazing is poor because of the slope.

The suitability for rangeland seeding is very poor. The main limitations are the slope and rock fragments. Seeding is generally not recommended.

The land capability classification of the Ridd soil is

VIIe, nonirrigated. The range site is Upland Stony Loam (Wyoming Big Sagebrush). The land capability classification of the Rock outcrop is VIII. No range site is assigned for the Rock outcrop.

50—Ridd-Wasatch-Rock outcrop association, 6 to 30 percent slopes. This map unit is on hillsides and fan remnants. Slopes are short or medium in length and are convex. The present vegetation in most areas of the Ridd soil is cheatgrass, foxtail fescue, sand dropseed, and threeawn. The present vegetation in most areas of the Wasatch soil is cheatgrass, needleandthread, and Utah juniper. Elevation is 4,200 to 5,300 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 140 to 180 days.

This unit is about 55 percent Ridd very stony sandy loam, 6 to 30 percent slopes, on hillsides; 20 percent Wasatch loamy coarse sand, 6 to 25 percent slopes, on fan remnants; 10 percent Rock outcrop; and 15 percent other soils.

The Ridd soil is moderately deep and is well drained. It formed in residuum and colluvium derived dominantly from gneiss, schist, and quartzite. Typically, the surface layer is brown very stony sandy loam about 13 inches thick. The subsoil is yellowish brown very stony sandy loam about 9 inches thick. The substratum is pale brown and light olive brown very stony sandy loam. Fractured gneiss and schist bedrock is at a depth of about 36 inches. In some areas the surface layer and subsoil are very gravelly sandy loam or very cobbly sandy loam. In other areas the depth to bedrock is more than 40 inches. In places the subsoil is very stony sandy clay loam.

The Wasatch soil is very deep and is excessively drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is brown loamy coarse sand about 18 inches thick. The underlying material to a depth of 60 inches or more is pale brown sand. In some areas the surface layer is sandy loam. In other areas the underlying material is loamy coarse sand.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

Included in mapping are small areas of the very deep, gravelly Kilburn soils on fan remnants and lake terraces; the shallow Reywat soils on south-facing slopes; very deep, loamy soils in drainageways under bigtooth maple and boxelder; and sandy soils containing a layer of carbonate accumulation on toe slopes of fan remnants.

Permeability is moderate in the Ridd soil. Available water capacity is very low (about 2.0 to 2.5 inches). The water-supplying capacity is 4.5 to 6.0 inches. Effective rooting depth is limited by bedrock at a depth of 20 to 40 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

Permeability is rapid in the Wasatch soil. Available water capacity is low (about 3 to 4 inches). The water-supplying capacity is 6 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Ridd soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass.

The potential plant community on the Wasatch soil is about 55 percent perennial grasses, 20 percent forbs, and 25 percent shrubs. Important plant species are Indian ricegrass, antelope bitterbrush, needleandthread, and western wheatgrass.

The suitability for livestock grazing is good.

The suitability of the Ridd soil for rangeland seeding is poor. The main limitations are the slope, the available water capacity, and rock fragments. The suitability of the Wasatch soil for range seeding is very poor. The main limitations are the texture of the surface layer and the available water capacity. Because of the slope and the rock fragments, the use of specialized equipment is necessary. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

The land capability classification of the Ridd soil is VIIs, nonirrigated. The range site is Upland Stony Loam (Wyoming Big Sagebrush). The land capability classification of the Wasatch soil is VIs, nonirrigated. The range site is Upland Sand (Indian Ricegrass). The land capability classification of the Rock outcrop is VIII. No range site is assigned for the Rock outcrop.

51—Rock outcrop-Lundy complex, 30 to 60 percent slopes. This map unit is on mountainsides that are mainly south-facing. Slopes are medium in length and are convex. The present vegetation in areas of the Lundy soil is low sagebrush, bluebunch wheatgrass, bitterbrush, and bluegrass. Elevation is 7,200 to 8,500 feet. The average annual precipitation is 16 to 22 inches, the mean annual air temperature is 40 to 45 degrees F, and the average frost-free period is 80 to 90 days.

This unit is about 70 percent Rock outcrop; 20

percent Lundy very cobbly loam, 30 to 60 percent slopes; and 10 percent other soils and talus. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Rock outcrop consists of exposures of barren bedrock, mainly on escarpments and ridges.

The Lundy soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is brown very cobbly loam about 11 inches thick. The subsoil is yellowish brown very cobbly loam. Fractured limestone bedrock is at a depth of about 18 inches. In some areas the soil is extremely cobbly loam or extremely stony loam throughout.

Included in mapping are small areas of the moderately deep Dateman soils on north-facing slopes under fir trees; the moderately deep Podmor soils on east- and west-facing slopes under mountain big sagebrush; talus slopes in the more sloping areas and in drainageways; and very deep, gravelly soils under maple.

Permeability is moderate in the Lundy soil. Available water capacity is very low (about 1 to 2 inches). The water-supplying capacity is 2 to 5 inches. Effective rooting depth is 10 to 20 inches. The content of organic matter in the surface layer is 2 to 4 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used for wildlife habitat.

The potential plant community on the Lundy soil is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, low sagebrush, bluegrass, and antelope bitterbrush.

The suitability for livestock grazing is poor because of the slope.

This unit is not suited to rangeland seeding because of the slope and the Rock outcrop.

This unit is poorly suited to roads and to building site development. The main limitations are the slope and the depth to bedrock.

The land capability classification of the Rock outcrop is VIII. No range site is assigned. The land capability classification of the Lundy soil is VIIe, nonirrigated. The range site is Mountain Shallow Loam (Low Sagebrush).

52—Salt flats. Salt flats are barren, undrained basins on lake plains near Wendover. The surface is covered with a layer of salt crust that ranges to about 1 foot in thickness. Many areas are commonly ponded in the spring. Some areas are of local importance as a source of salt from solar evaporation ponds. The Bonneville Salt Flats Race Track is in this unit.

The land capability classification is VIII.

53—Saltair-Playas complex, 0 to 1 percent slopes. This map unit is on lake plains. Slopes are long and linear. The present vegetation in most areas of the Saltair soil is pickleweed and inland saltgrass. Playas are mostly barren. Elevation is 4,200 to 4,300 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit is about 60 percent Saltair silt loam, 0 to 1 percent slopes; 30 percent Playas in depressions; and 10 percent other soils. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Saltair soil is very deep and is poorly drained. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is very pale brown silt loam about 8 inches thick. The underlying material to a depth of 60 inches or more is white silt loam and silty clay loam. In some areas the surface layer is silty clay loam or sandy loam.

Playas consist of barren, undrained basins. Many areas are commonly ponded in the spring. The surface is covered with a thin layer of salt and is patterned with cracks when dry. The soil material is stratified lacustrine sediments of silt loam, silty clay loam, and sandy loam.

Included in mapping are small areas of the well drained Skumpah soils under shadscale and greasewood, the somewhat excessively drained Dynal soils on stabilized oolitic dunes, the somewhat poorly drained Kanosh soils on low lake terraces under inland saltgrass, the poorly drained Logan soils in drainageways under inland saltgrass and rushes, and the somewhat excessively drained Yenrab soils on stabilized sand dunes.

Permeability is slow in the Saltair soil. Available water capacity is very low or low (about 1 to 5 inches). Effective rooting depth is limited by a seasonal high water table at the surface to 1 foot below the surface from March through October. A high content of salt also limits rooting depth. The content of organic matter in the surface layer is less than 1 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate. This soil is frequently flooded during the spring.

This unit is used mainly as a military bombing range. A few areas are used as rangeland. A few areas are used as a source of salt from solar evaporation ponds.

The potential plant community on the Saltair soil is about 35 percent perennial grasses, 10 percent forbs, and 55 percent shrubs. Important plant species are pickleweed, inland saltgrass, Europe swampfire, and seepweed.

The suitability for livestock grazing is poor because of low forage quality and low production.

This unit is not suited to rangeland seeding because of the content of salt and alkali.

This unit is not suited to recreational uses or to building site development. The main limitations are wetness and the flooding.

The land capability classification is VIII. The range site for the Saltair soil is Desert Salty Silt (Pickleweed). No range site is assigned for the Playas.

54—Scalade very fine sandy loam, moist, 2 to 5 percent slopes. This well drained soil is on fan remnants. It is shallow over a hardpan. It formed in alluvium derived dominantly from igneous rocks. Slopes are medium in length and are linear or slightly convex. The present vegetation in most areas is Wyoming big sagebrush, little rabbitbrush, Indian ricegrass, bluebunch wheatgrass, and bottlebrush squirreltail. Elevation is 5,000 to 6,000 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 120 days.

Typically, the surface layer is pale brown very fine sandy loam about 3 inches thick. The subsoil is pale brown and very pale brown very fine sandy loam about 14 inches thick. A hardpan is between the depths of 17 and 24 inches. It is strongly cemented with silica and carbonates. The underlying material to a depth of 60 inches or more is stratified, weakly cemented gravelly loam, weakly cemented gravelly loamy sand, indurated hardpans, and sand and gravel. In some areas the surface layer and the subsoil are loam.

Included with this soil in mapping are small areas of the very deep Medburn soils in drainageways, the very deep Hiko Peak soils along the upper drainageways, and the gravelly Jericho soils on ridges. Included soils make up about 15 percent of the total acreage of this unit.

Permeability is moderate in the Scalade soil. Available water capacity is very low or low (about 2 to 3 inches). The water-supplying capacity is 3 to 5 inches. Effective rooting depth is limited by the hardpan at a depth of 12 to 20 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 15 percent forbs, and 35 percent shrubs. Important plant species are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, and bottlebrush squirreltail.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is very poor. The main limitation is the restricted rooting depth. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

The land capability classification is VIIs, nonirrigated. The range site is Semidesert Loam (Wyoming Big Sagebrush).

55—Scalade-Jericho-Medburn association, 2 to 15 percent slopes. This map unit is on fan remnants. Slopes are short or medium in length and are convex to concave. The present vegetation in most areas of the Scalade soil is black sagebrush, Douglas rabbitbrush, Indian ricegrass, needleandthread, and bottlebrush squirreltail. The present vegetation in most areas of the Jericho soil is Utah juniper, black sagebrush, rabbitbrush, and Indian ricegrass (fig. 17). The present vegetation in most areas of the Medburn soil is Wyoming big sagebrush, cheatgrass, rabbitbrush, and Indian ricegrass. Elevation is 5,000 to 6,100 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 120 days.

This unit is about 40 percent Scalade very fine sandy loam, 2 to 5 percent slopes, on broad fan remnants; 30 percent Jericho gravelly sandy loam, 2 to 15 percent slopes, on ridges; 20 percent Medburn fine sandy loam, 2 to 8 percent slopes, in drainageways; and 10 percent other soils.

The Scalade soil is shallow and well drained. It formed in alluvium derived dominantly from igneous rocks. Typically, the surface layer is pale brown very fine sandy loam about 3 inches thick. The subsoil is pale brown and very pale brown very fine sandy loam about 14 inches thick. A hardpan is between the depths of 17 and 24 inches. It is strongly cemented with silica and carbonates. The underlying material to a depth of 60 inches or more is stratified, weakly cemented gravelly loam, weakly cemented gravelly loamy sand, indurated hardpans, and sand and gravel. In some areas the surface layer and the subsoil are loam.

The Jericho soil is shallow over a hardpan and is well drained. It formed in alluvium derived dominantly from igneous rocks. Typically, the surface layer is very pale brown gravelly sandy loam about 4 inches thick. The upper 5 inches of the subsoil is very pale brown gravelly sandy loam, and the lower 7 inches is very pale brown very gravelly sandy loam. A silica- and carbonate-cemented hardpan is between the depths of 16 and 20 inches. Below this to a depth of 60 inches or more are stratified extremely gravelly loam, coarse sand, cemented hardpans, and sand and gravel. In

Figure 17.—Utah juniper and black sagebrush on Jericho gravelly sandy loam in an area of Scalade-Jericho-Medburn association, 2 to 15 percent slopes, near Ibapah.

some areas the surface layer is gravelly loam or very gravelly sandy loam.

The Medburn soil is very deep and is well drained. It formed in alluvium derived dominantly from sedimentary rocks. Typically, the surface layer is pale brown fine sandy loam about 4 inches thick. The subsoil is light yellowish brown fine sandy loam about 37 inches thick. The substratum to a depth of 60 inches or more is very pale brown fine sandy loam. In some areas the surface layer is very fine sandy loam or sandy loam.

Included in mapping are small areas of the very deep, gravelly Hiko Peak soils on side slopes along drainageways and the saline Taylorsflat soils on the lower fan remnants. Taylorsflat soils support greasewood.

Permeability is moderate in the Scalade soil. Available water capacity is very low or low (about 2 to 3 inches). The water-supplying capacity is 3.0 to 4.5 inches. Effective rooting depth is limited by the hardpan at a depth of 12 to 20 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is severe. The

hazard of wind erosion is moderate.

Permeability is moderately rapid in the Jericho soil. Available water capacity is very low (about 1.0 to 1.5 inches). The water-supplying capacity is 1 to 2 inches. Effective rooting depth is limited by the hardpan at a depth of 14 to 20 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Permeability is moderately rapid in the Medburn soil. Available water capacity is moderate (about 5 to 7 inches). The water-supplying capacity is 5 to 8 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of wind erosion also is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Scalade soil is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are black sagebrush, Indian ricegrass, needleandthread, and winterfat.

The potential plant community on the Jericho soil is an overstory of Utah juniper with about 30 percent canopy cover. The understory is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and winterfat.

The potential plant community on the Medburn soil is about 50 percent perennial grasses, 15 percent forbs, and 35 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail.

The site index for Utah juniper is 15 on the Jericho soil. Average productivity is low. Average yields are less than 1 cord of wood per acre. The potential for production of posts is poor.

The suitability for livestock grazing on the Jericho and Scalade soils is only fair because of moderate forage production. The suitability for livestock grazing on the Medburn soil is good.

The suitability of the Scalade and Jericho soils for rangeland seeding is very poor. The main limitations are the restricted rooting depth and the available water capacity. The suitability of the Medburn soil for rangeland seeding is poor because of low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

The land capability classification is VIIs, nonirrigated. The range site for the Scalade soil is Semidesert Shallow Hardpan 8-10 Ppt. The woodland site for the Jericho soil is Semidesert Shallow Hardpan (Utah Juniper). The range site for the Medburn soil is Semidesert Loam (Wyoming Big Sagebrush).

56—Skumpah silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on lake terraces. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are long and linear. The present vegetation in most areas is shadscale, gray molly, seepweed, and bottlebrush squirreltail. Elevation is 4,200 to 4,700 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is light gray silt loam about 5 inches thick. The upper 9 inches of the subsoil is light yellowish brown, moderately saline silty clay loam, and the lower 14 inches is pale brown silt loam. The substratum to a depth of 60 inches or more is white and light gray silty clay loam. In some areas the surface layer is silty clay loam or fine sandy loam.

Included with this soil in mapping are small areas of the saline Skumpah soils under greasewood, the poorly drained Saltair soils under pickleweed, the loamy Tooele soils on ridges, Playas, the somewhat excessively drained Dynal soils on oolitic dunes, and the somewhat excessively drained Yenrab soils on stabilized sand dunes. Included areas make up 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Skumpah soil. Available water capacity is low or moderate (about 3.5 to 7.0 inches). The water-supplying capacity is 3.0 to 5.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 15 percent perennial grasses, 5 percent forbs, and 80 percent shrubs. Important plant species are shadscale, winterfat, bottlebrush squirreltail, and bud sagebrush.

The suitability for livestock grazing is poor because of low forage production.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. Seeding is generally not recommended.

This unit is generally not suited to cropland. A few small areas have been reclaimed and are used for irrigated pasture, alfalfa, or barley, but careful management is necessary. The main limitations are the content of salt and alkali and a lack of available irrigation water.

This unit is poorly suited to roads and to building site development. The main limitations are the shrink-swell potential, low strength, and a slow percolation rate. The effects of shrinking and swelling can be minimized by using proper engineering designs and backfilling with material that has a low shrink-swell potential. On sites for septic tank absorption fields, sandy backfill and longer lines are needed to overcome the slow percolation rate.

The land capability classification is VIIs, nonirrigated. The range site is Desert Flat (Shadscale).

57—Skumpah silt loam, wet substratum, 0 to 1 percent slopes. This very deep, well drained soil is in depressional areas on lake terraces. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are medium in length and are linear. The present vegetation in most areas is alkali sacaton and saltgrass. Elevation is 4,200 to 4,300 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is light gray silt loam about 2 inches thick. The upper 7 inches of the subsoil is very pale brown silty clay loam, and the lower 17 inches is light gray silty clay loam. The substratum to a depth of 60 inches or more is white silty clay loam. In some areas the surface layer is fine sandy loam or loam. In other areas the substratum is fine sandy loam or very fine sandy loam. In places the substratum is weakly cemented.

Included with this soil in mapping are small areas of the somewhat excessively drained Yenrab soils on stabilized sand dunes, the somewhat excessively drained Dynal soils on oolitic dunes, the loamy Tooele soils on ridges, the somewhat poorly drained Bramwell soils in depressions under saltgrass, the poorly drained Saltair soils on lake plains under pickleweed, and the saline Skumpah soils in the slightly higher areas under greasewood. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Skumpah soil. Available water capacity is low or moderate (about 4.5 to 7.5 inches). Effective rooting depth is limited by a seasonal high water table at a depth of 3.5 to 5.0 feet from March through July. The content of organic matter in the surface layer is about 0.5 percent to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 70 percent perennial grasses, 10 percent forbs, and 20 percent shrubs. Important plant species are inland saltgrass, alkali sacaton, alkali bluegrass, and basin wildrye.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. Seeding is generally not recommended.

This unit is generally not suited to cropland. A few small areas have been reclaimed and are used for irrigated pasture, alfalfa, or barley, but careful management is needed. The main limitations are the content of salt and alkali and a lack of available irrigation water.

This unit is poorly suited to roads and to building site development. The main limitations are wetness, the shrink-swell potential, low strength, and a slow percolation rate. The effects of shrinking and swelling can be minimized by using proper engineering designs and backfilling with material that has a low shrink-swell potential. On sites for septic tank absorption fields, sandy backfill and longer lines are needed to overcome the slow percolation rate.

The land capability classification is VIIs, nonirrigated. The range site is Alkali Bottom (Alkali Sacaton).

58—Skumpah silt loam, wet substratum, saline, 0 to 1 percent slopes. This very deep, well drained soil is in depressional areas on lake terraces. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are long and linear. The present vegetation in most areas is sickle saltbush, gray molly, seepweed, and bottlebrush squirreltail. Elevation is 4,200 to 5,050 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is light gray silt loam about 2 inches thick. The upper 7 inches of the subsoil is very pale brown silty clay loam, and the lower 23 inches is very pale brown and light gray, saline silt loam and silty clay loam. The substratum to a depth of 60 inches or more is white silt loam. In some areas the surface layer is silty clay loam. In other areas the underlying material is clay loam.

Included with this soil in mapping are small areas of the nonsaline Skumpah soils under shadscale, the loamy Tooele soils on ridges, the poorly drained Saltair soils on lake plains, the somewhat excessively drained Yenrab soils on stabilized sand dunes, the somewhat excessively drained Dynal soils on oolitic dunes, and barren Playas. Included areas make up about 10 percent of the total acreage of this unit.

Permeability is moderately low in the Skumpah soil. Available water capacity is low or moderate (about 4.5 to 7.5 inches). Effective rooting depth is limited by a seasonal high water table at a depth of 3.5 to 5.0 feet

from March through July. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 10 percent perennial grasses, 10 percent forbs, and 80 percent shrubs. Important plant species are sickle saltbush, gray molly, and bottlebrush squirreltail.

The suitability for livestock grazing is poor because of low forage production.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. Seeding is generally not recommended.

This unit is poorly suited to roads and to building site development. The main limitations are wetness, the shrink-swell potential, low strength, and a slow percolation rate. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has a low shrink-swell potential. On sites for septic tank absorption fields, sandy backfill and longer lines are needed to overcome the slow percolation rate.

The land capability classification is VIIs, nonirrigated. The range site is Desert Salt Flat (Sickle Saltbush).

59—Skumpah silt loam, saline, 0 to 2 percent slopes. This very deep, well drained soil is on lake terraces. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are long and linear. The present vegetation in most areas is black greasewood, gray molly, seepweed, and bottlebrush squirreltail. Elevation is 4,200 to 5,050 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is light gray silt loam about 4 inches thick. The upper 7 inches of the subsoil is light yellowish brown clay loam, and the lower 16 inches is white silty clay loam. The substratum to a depth of 60 inches or more also is white silty clay loam. In some areas the surface layer is silty clay loam.

Included with this soil in mapping are small areas of the nonsaline Skumpah soils under shadscale, the loamy Tooele soils on ridges, the poorly drained Saltair soils under pickleweed on lake plains, and Playas. Included areas make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Skumpah soil. Available water capacity is low or moderate (about 3.5 to 7.0 inches). The water-supplying capacity is 3.0 to 5.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 25 percent perennial grasses, 10 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, bottlebrush squirreltail, alkali sacaton, and seepweed.

The suitability for livestock grazing is poor because of low forage production and the relative unpalatability of the dominant plants.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. Seeding is generally not recommended.

This unit is generally not suited to cropland. A few small areas have been reclaimed and are used for irrigated pasture, alfalfa, or barley, but careful management is needed. The main limitations are the content of salt and alkali and a lack of available irrigation water.

This unit is poorly suited to roads and to building site development. The main limitations are the shrink-swell potential, low strength, and a slow percolation rate. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has a low shrink-swell potential. On sites for septic tank absorption fields, sandy backfill and longer lines are needed to overcome the slow percolation rate.

The land capability classification is VIIs, nonirrigated. The range site is Alkali Flat (Black Greasewood).

60—Skumpah-Yenrab complex, saline, 0 to 15 percent slopes. This map unit is on lake plains, lake terraces, and hummocky stabilized sand dunes. Slopes are short and linear on the Skumpah soil and short and convex on the Yenrab soil. The present vegetation on the Skumpah soil is black greasewood, gray molly, seepweed, and bottlebrush squirreltail, and that on the Yenrab soil is cheatgrass, black greasewood, Indian ricegrass, winterfat, and needleandthread. Elevation is 4,200 to 4,400 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit is about 45 percent Skumpah silt loam, saline, 0 to 2 percent slopes, on low lake terraces; 40 percent Yenrab loamy fine sand, saline, 2 to 15 percent slopes, on stabilized sand dunes; and 15 percent other soils and Playas. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Skumpah soil is very deep and is well drained. It

formed in alluvium and lacustrine sediments derived from mixed rock sources. Typically, the surface layer is light gray silt loam about 4 inches thick. The upper 7 inches of the subsoil is light yellowish brown silty clay loam, and the lower 16 inches is white silty clay loam. The substratum to a depth of 60 inches or more also is white silty clay loam. In some areas the surface layer is silty clay loam.

The Yenrab soil is very deep and is somewhat excessively drained. It formed in eolian sands derived from mixed rock sources. Typically, the surface layer is very pale brown loamy fine sand about 5 inches thick. The underlying material to a depth of 60 inches or more is very pale brown fine sand. In some areas the surface layer is fine sand.

Included in mapping are small areas of the loamy Tooele soils adjacent to dunes, the poorly drained Saltair soils under pickleweed, and Playas.

Permeability is moderately slow in the Skumpah soil. Available water capacity is low or moderate (about 3.5 to 7.0 inches). The water-supplying capacity is 3.0 to 5.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Permeability is rapid in the Yenrab soil. Available water capacity is low (about 3.5 to 4.5 inches). The water-supplying capacity is 2.5 to 4.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 1 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Skumpah soil is about 25 percent perennial grasses, 10 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, bottlebrush squirreltail, alkali sacaton, and seepweed.

The potential plant community on the Yenrab soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are Indian ricegrass, fourwing saltbush, alkali sacaton, Douglas rabbitbrush, and black greasewood.

The suitability for livestock grazing on the Skumpah soil is poor because of low forage production and the relative unpalatability of the dominant plants. The suitability for livestock grazing on the Yenrab soil is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. Seeding is generally not recommended.

The land capability classification is VIIs, nonirrigated. The range site for the Skumpah soil is Alkali Flat (Black Greasewood). The range site for the Yenrab soil is Desert Alkali Sand (Fourwing Saltbush).

61—Slickens and mine dumps. Slickens are accumulations of fine textured material, such as material separated in placer mine and ore mill operations. Slickens from ore mills consist largely of freshly ground rock, which commonly has undergone chemical treatment during the milling process. Such material is typically detrimental to plant growth. This unit contains less than 10 percent vegetative cover and has large, deep gullies.

Mine dumps consist mainly of rock fragments removed in mining operations and left in piles. The material commonly contains arsenic and sulfur in amounts high enough to be toxic to plants. These areas support little vegetation and have no agricultural value.

The land capability classification is VIII.

62—Spager gravelly loam, 2 to 15 percent slopes. This somewhat excessively drained soil is on fan remnants. It is shallow over a hardpan. It formed in alluvium derived dominantly from limestone. Slopes are long and are linear to convex. The present vegetation in most areas is rabbitbrush, black sagebrush, Indian ricegrass, and bluebunch wheatgrass. Elevation is 5,200 to 6,200 feet. The average annual precipitation is 8 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 100 to 140 days.

Typically, the surface layer is pale brown gravelly loam about 3 inches thick. The subsoil is very pale brown very gravelly loam about 11 inches thick. A carbonate-cemented hardpan is between the depths of 14 and 20 inches. The underlying material to a depth of 60 inches or more is stratified very gravelly sandy loam, very gravelly loamy sand, and carbonate-cemented hardpan. In some areas the surface layer is stony loam or very gravelly loam. In other areas the hardpan is below a depth of 20 inches. In a few places slopes are more than 15 percent.

Included with this soil in mapping are small areas of the very deep Hiko Peak soils along drainageways under Wyoming big sagebrush and the shallow Amtoft soils under black sagebrush. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately rapid in the Spager soil. Available water capacity is very low (about 1 to 2 inches). The water-supplying capacity is 2 to 4 inches. Effective rooting depth is limited by the hardpan at a depth of 10 to 20 inches. The content of organic matter in the surface layer is 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is moderate. The

hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are black sagebrush, Indian ricegrass, needleandthread, and bottlebrush squirreltail.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitations are the available water capacity and the restricted rooting depth. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

The land capability classification is VIIs, nonirrigated. The range site is Semidesert Shallow Hardpan 8-10 Ppt.

63—Springmeyer gravelly sandy loam, 3 to 7 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from granite. Slopes are short and convex. The present vegetation in most areas is mountain big sagebrush, Nevada bluegrass, and Douglas rabbitbrush. Elevation is 5,900 to 6,500 feet. The average annual precipitation is 12 to 14 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 100 to 120 days.

Typically, the surface layer is grayish brown and dark grayish brown gravelly sandy loam about 14 inches thick. The upper 15 inches of the subsoil is brown and light brown gravelly sandy clay loam, and the lower 13 inches is light brown very gravelly sandy loam. The substratum to a depth of 60 inches or more is light yellowish brown and yellowish brown very gravelly loamy sand. In some areas the surface layer is gravelly loam.

Included with this soil in mapping are small areas of the loamy Doyce soils on the lower fan remnants, the very stony Holmes soils on ridges and the upper fan remnants, and the loamy Birdow soils in drainageways. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Springmeyer soil. Available water capacity is low or moderate (about 4.0 to 5.5 inches). The water-supplying capacity is 6.5 to 8.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for rangeland, pasture, or wildlife habitat. It has potential for use as irrigated cropland.

The potential plant community is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are bluebunch wheatgrass, mountain big sagebrush, bluegrass, and antelope bitterbrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitations are low precipitation and rock fragments. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

The land capability classification is VIs, nonirrigated. The range site is Upland Gravelly Loam (Mountain Big Sagebrush).

64—Taylorsflat loam, 1 to 5 percent slopes. This very deep, well drained soil is on lake terraces and fan remnants. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are medium in length and are linear to convex. The present vegetation in most areas is Wyoming big sagebrush, Indian ricegrass, and cheatgrass. Elevation is 5,000 to 6,000 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 110 to 140 days.

Typically, the surface layer is pale brown loam about 4 inches thick. The upper 5 inches of the subsoil is light yellowish brown loam. The lower 42 inches is very pale brown loam. The substratum to a depth of 60 inches or more also is very pale brown loam. In some areas the surface layer is silt loam or sandy loam. In places gravelly textures are below a depth of 40 inches.

Included with this soil in mapping are small areas of the gravelly Hiko Peak soils in landscape positions similar to those of the Taylorsflat soil, Spager soils on ridges, and the loamy Birdow soils in drainageways. Spager soils are shallow to a hardpan. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Taylorsflat soil. Available water capacity is moderate or high (about 6.5 to 9.5 inches). The water-supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for rangeland, wildlife habitat, building site development, irrigated alfalfa, irrigated barley, or irrigated pasture.

The potential plant community is about 50 percent

perennial grasses, 15 percent forbs, and 35 percent shrubs. Important plant species are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is fair. The main limitation is low precipitation. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding drought-tolerant species.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, furrow, and controlled flooding. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion. This soil is not suited to nonirrigated crops because of low precipitation.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

If this unit is used for roads or for building site development, the main limitations are a slow percolation rate and the potential for frost action.

The land capability classification is IIIs, irrigated, and VIs, nonirrigated. The range site is Semidesert Loam (Wyoming Big Sagebrush).

65—Taylorsflat loam, saline, 0 to 3 percent slopes. This very deep, well drained soil is on lake terraces and fan remnants. It formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are medium in length and are linear or slightly convex. The present vegetation in most areas is black greasewood, cheatgrass, shadscale, and Indian ricegrass. Elevation is 4,300 to 5,300 feet. The average annual precipitation is 10 to 12 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 110 to 140 days.

Typically, the surface layer is pale brown loam about 3 inches thick. The upper 6 inches of the subsoil is light yellowish brown loam, and the lower 38 inches is very pale brown loam. The substratum to a depth of 60 inches or more is pale brown loam. In some areas the surface layer is silt loam. In some places the soil is silt loam throughout. In other places gravelly textures are below a depth of 40 inches.

Included with this soil in mapping are small areas of the nonsaline Taylorsflat soils under Wyoming big sagebrush, the gravelly Hiko Peak soils on ridges under Wyoming big sagebrush, and Spager soils on ridges under black sagebrush. Spager soils are shallow to a hardpan. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Taylorsflat soil. Available water capacity is moderate or high (about 6.5 to 9.0 inches). The water-supplying capacity is 8 to 10 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for rangeland (fig. 18), wildlife habitat, building site development, irrigated alfalfa, irrigated barley, or irrigated pasture.

The potential plant community is about 30 percent perennial grasses, 15 percent forbs, and 55 percent shrubs. Important plant species are black greasewood, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitation is the content of salt and alkali. The suitability for seeding can be improved by removing competing vegetation prior to seeding, by seeding prior to periods of high soil moisture, and by seeding adapted species.

This soil is suited to irrigated crops if the content of salt and alkali is reduced by incorporating a minimum leaching program. Suitable crops are small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, furrow, and controlled flooding. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion. This soil is not suited to nonirrigated crops because of low precipitation.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

If this unit is used for roads or for building site development, the main limitations are a slow percolation rate and the potential for frost action. Maintaining drainage channels helps to control spring runoff.

The land capability classification is IVs, irrigated, and VIs, nonirrigated. The range site is Semidesert Alkali Loam (Black Greasewood).

65A—Theriot-Rock outcrop complex, 15 to 70 percent slopes. This map unit is on mountainsides and hillsides. Slopes are short and convex. The present vegetation in most areas is shadscale, spiny horsebrush, galleta, and Indian ricegrass. Elevation is

Figure 18.—Rangeland in an area of Taylorsflat loam, saline, 0 to 3 percent slopes, in Rush Valley. South Mountain and the Oquirrh Mountains are in the background.

4,250 to 6,300 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 50 to 52 degrees F, and the average frost-free period is 150 to 170 days.

This unit is about 70 percent Theriot very stony loam, 15 to 70 percent slopes; 15 percent Rock outcrop; and 15 percent other soils. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Theriot soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from limestone. Typically, the surface layer is light brownish gray very stony loam about 3 inches thick. The underlying material is very pale brown very cobbly loam. Fractured limestone bedrock is at a depth of about 14 inches. In some areas the soil is extremely stony loam or extremely cobbly loam throughout.

Rock outcrop consists of exposures of barren limestone, mainly on escarpments and ridges.

Included in mapping are small areas of the shallow Amtoft soils on the upper slopes under Utah juniper, the very deep Hiko Peak soils on the upper fan remnants

and in drainageways, Spager soils on high fan remnants, and the very deep Cliffdown and Izamatch soils on low fan remnants. Spager soils are shallow to a hardpan.

Permeability is moderate in the Theriot soil. Available water capacity to a depth of 16 inches is very low (about 0.5 inch to 1.0 inch). The water-supplying capacity is 1 to 2 inches. Effective rooting depth is 10 to 20 inches. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is very rapid, and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Theriot soil is about 30 percent perennial grasses, 10 percent forbs, and 60 percent shrubs. Important plant species are shadscale, galleta, bud sagebrush, and Indian ricegrass.

The suitability for livestock grazing is poor because of low forage production and the slope.

The suitability of the Theriot soil for rangeland seeding is very poor. The main limitations are the slope, the restricted rooting depth, rock fragments, and the available water capacity. Seeding is not recommended.

This unit is poorly suited to roads and to building site development. The main limitations are the slope and the depth to bedrock.

The land capability classification of the Theriot soil is VIIs, nonirrigated. The range site is Desert Shallow Loam (Shadscale). The land capability classification of the Rock outcrop is VIII. No range site is assigned for the Rock outcrop.

66—Timpie silt loam, 0 to 3 percent slopes. This very deep, well drained soil is on lake terraces and fan remnants. It formed in lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Slopes are long and are linear or slightly convex. The present vegetation in most areas is shadscale, cheatgrass, gray molly, bud sagebrush, and bottlebrush squirreltail. Elevation is 4,300 to 5,300 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 47 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is pale brown silt loam about 5 inches thick. The subsoil is very pale brown silt loam about 9 inches thick. The underlying material to a depth of 60 inches or more also is very pale brown silt loam. In some areas the surface layer is fine sandy loam or loam.

Included with this soil in mapping are small areas of the gravelly Cliffdown soils along drainageways, silty soils in depressional areas under winterfat, the somewhat excessively drained Yenrab soils on stabilized sand dunes, the saline Skumpah soils on the lower lake terraces, and the saline Timpie soils under greasewood. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Timpie soil. Available water capacity is low or moderate (about 4 to 7 inches). The water-supplying capacity is 3.0 to 5.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland or for wildlife habitat. Some small areas are used for irrigated alfalfa, irrigated barley, or irrigated pasture.

The potential plant community is about 35 percent perennial grasses, 15 percent forbs, and 50 percent shrubs. Important plant species are shadscale, Indian ricegrass, bud sagebrush, winterfat, and bottlebrush squirreltail.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitation is low precipitation. Seeding is generally not recommended.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, furrow, and controlled flooding. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion. This soil is not suited to nonirrigated crops because of low precipitation.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

The land capability classification is IVs, irrigated, and VIIs, nonirrigated. The range site is Desert Loam (Shadscale).

67—Timpie silt loam, saline, 0 to 4 percent slopes. This very deep, well drained soil is on fan remnants and lake terraces. It formed in alluvium and lacustrine sediments derived dominantly from limestone and quartzite. Slopes are short or medium in length and are linear or slightly convex. The present vegetation in most areas is black greasewood, shadscale, cheatgrass, gray molly, and trident saltbush. Elevation is 4,200 to 4,500 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 47 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is pale brown silt loam about 3 inches thick. The subsoil is very pale brown silt loam about 18 inches thick. The underlying material to a depth of 60 inches or more also is very pale brown silt loam. In some areas the surface layer is fine sandy loam or loam.

Included with this soil in mapping are small areas of the saline Skumpah soils on the lower lake terraces, the gravelly Cliffdown soils along drainageways, the somewhat excessively drained Yenrab soils on stabilized sand dunes, and the nonsaline Timpie soils under shadscale. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately slow in the Timpie soil. Available water capacity is low or moderate (about 4 to 7 inches). The water-supplying capacity is 3.0 to 5.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland or for wildlife habitat. Some small areas are used for irrigated alfalfa, irrigated barley, or irrigated pasture.

The potential plant community is about 25 percent perennial grasses, 10 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, bottlebrush squirreltail, alkali sacaton, and seepweed.

The suitability for livestock grazing is poor because of low forage production and the relative unpalatability of the dominant plants.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. Seeding is generally not recommended.

This soil is suited to irrigated crops if the content of salt and alkali is reduced by incorporating a minimum leaching program. Suitable crops are small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, furrow, and controlled flooding. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion. This soil is not suited to nonirrigated crops because of low precipitation.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

The land capability classification is IVs, irrigated, and VIIs, nonirrigated. The range site is Alkali Flat (Black Greasewood).

68—Timpie-Tooele complex, saline, 0 to 5 percent slopes. This map unit is on lake terraces. Slopes are medium in length and are linear to convex. The present vegetation in most areas is black greasewood, shadscale, cheatgrass, gray molly, and trident saltbush. Elevation is 4,200 to 4,500 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 47 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit is about 60 percent Timpie silt loam, saline, 0 to 4 percent slopes, in linear positions; 25 percent Tooele fine sandy loam, saline, 0 to 5 percent slopes, in convex positions; and 15 percent other soils. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Timpie soil is very deep and is well drained. It formed in lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is pale brown silt loam about 3 inches thick. The subsoil is very pale brown silt loam about 18 inches thick. The underlying material to a depth of 60 inches or more also is very pale brown silt loam. In some areas the surface layer is very fine sandy loam or loam.

The Tooele soil is very deep and is well drained. It formed in eolian material, lacustrine sediments, and alluvium derived from mixed rock sources. Typically, the surface layer is pale brown fine sandy loam about 10 inches thick. The underlying material to a depth of 60 inches or more is very pale brown fine sandy loam. In some areas the surface layer is sandy loam or loam. In other areas gravelly or sandy layers are below a depth of 30 inches.

Included in mapping are small areas of the somewhat excessively drained Yenrab soils on stabilized sand dunes and the gravelly Izamatch soils on ridges.

Permeability is moderately slow in the Timpie soil. Available water capacity is low or moderate (about 4 to 7 inches). The water-supplying capacity is 3.0 to 5.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Permeability is moderately rapid in the Tooele soil. Available water capacity is low (about 3.0 to 5.5 inches). The water-supplying capacity is 3 to 5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 25 percent perennial grasses, 10 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, bottlebrush squirreltail, alkali sacaton, and seepweed.

The suitability for livestock grazing is poor because of low forage production and the relative unpalatability of the dominant plants.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. Seeding is generally not recommended.

The land capability classification is VIIs, nonirrigated. The range site is Alkali Flat (Black Greasewood).

69—Tooele fine sandy loam, 0 to 5 percent slopes. This very deep, well drained soil is on lake terraces and fan remnants. It formed in eolian material, lacustrine sediments, and alluvium derived from mixed rock sources. Slopes are long and are linear or slightly convex. The present vegetation in most areas is shadscale, cheatgrass, Indian ricegrass, and horsebrush. Elevation is 4,300 to 6,000 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is pale brown and very pale brown fine sandy loam about 9 inches thick. The upper part of the underlying material is very pale brown fine sandy loam about 33 inches thick. The lower part to a depth of 60 inches or more is very pale brown fine sand. In some areas the surface layer is silt loam or loam. In other areas the soil is very fine sandy loam or fine sandy loam throughout.

Included with this soil in mapping are small areas of the somewhat excessively drained Yenrab soils on stabilized sand dunes, silty soils in depressional areas under winterfat, the gravelly Cliffdown soils on ridges and along drainageways, and the silty Timpie soils on the lower fan remnants under shadscale. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately rapid in the Tooele soil. Available water capacity is moderate (about 5.0 to 6.5 inches). The water-supplying capacity is 3.5 to 5.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland or for wildlife habitat. Some small areas are used for irrigated alfalfa, irrigated barley, or irrigated pasture.

The potential plant community is about 35 percent perennial grasses, 15 percent forbs, and 50 percent shrubs. Important plant species are shadscale, Indian ricegrass, bud sagebrush, bottlebrush squirreltail, and winterfat.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitation is low precipitation. Seeding is generally not recommended.

This soil is suited to irrigated crops of small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, furrow, and controlled flooding. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion. This soil is not suited to nonirrigated crops because of low precipitation.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

The land capability classification is IVs, irrigated, and VIIs, nonirrigated. The range site is Desert Loam (Shadscale).

70—Tooele fine sandy loam, saline, 0 to 5 percent slopes. This very deep, well drained soil is on lake terraces and fan remnants. It formed in eolian material, lacustrine sediments, and alluvium derived from mixed rock sources. Slopes are long and are linear or slightly convex. The present vegetation in most areas is black greasewood, cheatgrass, gray molly, and shadscale. Elevation is 4,200 to 5,000 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 50 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is pale brown fine sandy loam about 10 inches thick. The underlying material to a depth of 60 inches or more is very pale brown fine sandy loam. In some areas the surface layer is silt loam, very fine sandy loam, or loam. In other areas gravelly or sandy layers are below a depth of 30 inches.

Included with this soil in mapping are small areas of the nonsaline Tooele soils under shadscale, the silty Skumpah soils on low lake terraces, Yenrab soils on stabilized sand dunes, and the gravelly Cliffdown soils on ridges. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is moderately rapid in the Tooele soil. Available water capacity is low (about 3.0 to 5.5 inches). The water-supplying capacity is 3 to 5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water

Figure 19.—An area of Tooele fine sandy loam, saline, 0 to 5 percent slopes, used as *rangeland*. The Stansbury Mountains are in the background.

erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly as rangeland (fig. 19) or for wildlife habitat. Some small areas are used for irrigated alfalfa, irrigated barley, or irrigated pasture.

The potential plant community is about 25 percent perennial grasses, 10 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, bottlebrush squirreltail, alkali sacaton, and seepweed.

The suitability for livestock grazing is poor because of low forage production and the relative unpalatability of the dominant plants.

The suitability for rangeland seeding is very poor. The main limitations are low precipitation and the content of salt and alkali. Seeding is generally not recommended.

This soil is suited to irrigated crops if the content of salt and alkali is reduced by incorporating a minimum

leaching program. Suitable crops are small grain, alfalfa hay, corn silage, and pasture. The suitable irrigation systems are wheel line or handline sprinklers, center pivot, furrow, and controlled flooding. The design of irrigation systems should not exceed the intake rate of the soil. Keeping crop residue on the surface and using a conservation tillage system help to control wind erosion and water erosion. This soil is not suited to nonirrigated crops because of low annual precipitation.

If good management practices are applied, irrigated alfalfa can yield about 6 tons per acre, irrigated barley can yield about 80 bushels per acre, and irrigated pasture can yield about 7 animal unit months per acre.

The land capability classification is IVs, irrigated, and VIIs, nonirrigated. The range site is Alkali Flat (Black Greasewood).

71—Yeates Hollow cobbly loam, 6 to 20 percent slopes. This very deep, well drained soil is on fan remnants. It formed in alluvium derived dominantly from quartzite and sandstone. Slopes are medium in length and are convex. The present vegetation in most areas is bluebunch wheatgrass, basin wildrye, rabbitbrush, mulesear dock, and mountain big sagebrush. Elevation is 6,400 to 8,000 feet. The average annual precipitation is 16 to 20 inches, the mean annual air temperature is 38 to 45 degrees F, and the average frost-free period is 80 to 110 days.

Typically, the surface layer is brown cobbly loam about 12 inches thick. The subsoil is brown and light brown very cobbly clay loam about 32 inches thick. The substratum to a depth of 60 inches or more is light yellowish brown extremely cobbly sandy clay loam. In some areas the surface layer is loam, gravelly loam, very cobbly loam, or stony loam. In other areas, the upper part of the subsoil is gravelly clay loam or cobbly clay loam and the lower part is extremely gravelly loam, extremely cobbly loam, or extremely cobbly sandy loam.

Included with this soil in mapping are small areas of the moderately deep Broad soils on the steeper slopes under Gambel oak, the very cobbly Kapod soils on ridges under juniper and pinyon trees, and very deep, loamy soils in drainageways under bigtooth maple, chokecherry, and willows. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is slow in the Yeates Hollow soil. Available water capacity is moderate (about 5.0 to 6.5 inches). The water-supplying capacity is 9 to 12 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 5 percent. Runoff is medium, and the hazard of water erosion is slight. The hazard of wind erosion also is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 45 percent perennial grasses, 10 percent forbs, and 45 percent shrubs. Important plant species are bluebunch wheatgrass, birchleaf mountainmahogany, bluegrass, and mountain big sagebrush.

The suitability for livestock grazing is good.

The suitability for rangeland seeding is poor. Because of the slope and the rock fragments in the surface layer, the use of specialized equipment is necessary.

The land capability classification is IVe, nonirrigated. The range site is Mountain Gravelly Loam (Mountain Big Sagebrush).

72—Yeates Hollow very cobbly loam, 6 to 40 percent slopes. This very deep, well drained soil is on dissected fan remnants. It formed in alluvium derived dominantly from quartzite and sandstone. Slopes are medium in length and are convex. The present vegetation in most areas is bluebunch wheatgrass, low sagebrush, and bluegrass. Elevation is 5,400 to 7,600 feet. The average annual precipitation is 14 to 16 inches, the mean annual air temperature is 38 to 45 degrees F, and the average frost-free period is 80 to 100 days.

Typically, the surface layer is very dark grayish brown very cobbly loam about 12 inches thick. The subsoil is brown very cobbly clay loam about 26 inches thick. The substratum to a depth of 60 inches or more is light yellowish brown extremely cobbly sandy clay loam. In some areas the surface layer is very stony loam or very gravelly loam.

Included with this soil in mapping are small areas of the very stony Holmes soils on ridges, the gravelly Springmeyer soils in drainageways, Borvant soils on the lower fan remnants, and the moderately deep Podmor soils on mountainsides. Borvant soils are shallow to a hardpan. Included soils make up about 10 percent of the total acreage of this unit.

Permeability is slow in the Yeates Hollow soil. Available water capacity is low or moderate (about 4 to 6 inches). The water-supplying capacity is 7.5 to 9.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 2 to 5 percent. Runoff is rapid, and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 50 percent perennial grasses, 10 percent forbs, and 40 percent shrubs. Important plant species are low sagebrush, bluegrass, needlegrass, and bluebunch wheatgrass.

The suitability for livestock grazing is only fair because of moderate forage production and the slope.

The suitability for rangeland seeding is poor. Because of the rock fragments in the surface layer and the slope, the use of specialized equipment is necessary.

The land capability classification is VIe, nonirrigated. The range site is Upland Claypan (Low Sagebrush).

73—Yenrab fine sand, 2 to 15 percent slopes. This very deep, somewhat excessively drained soil is on hummocky stabilized sand dunes on lake terraces, fan remnants, and lake plains. It formed in eolian sands derived from mixed rock sources. Slopes are short and are convex to concave. The present vegetation in most areas is Indian ricegrass, fourwing saltbush, rabbitbrush, and winterfat. Elevation is 4,400 to 4,900 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

Typically, the surface layer is pale brown fine sand about 15 inches thick. The underlying material to a depth of 60 inches or more is light yellowish brown fine sand. In some areas the surface layer is loamy fine sand.

Included with this soil in mapping are small areas of the gravelly Izamatch soils on lake terraces, the loamy Tooele soils on lake terraces, and areas of Playas and Dune land. Included areas make up about 10 percent of the total acreage of this unit.

Permeability is rapid in the Yenrab soil. Available water capacity is low (about 3.0 to 4.5 inches). The water-supplying capacity is 2.5 to 4.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 1 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is very severe.

This unit is used as rangeland or for wildlife habitat.

The potential plant community is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are Indian ricegrass, fourwing saltbush, winterfat, and Mormon tea.

The suitability for livestock grazing is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitations are the texture of the surface layer and the low precipitation. Seeding is generally not recommended.

The land capability classification is VIIs, nonirrigated. The range site is Desert Sand (Fourwing Saltbush).

74—Yenrab-Badlands complex, 2 to 15 percent slopes. This map unit is on hummocky stabilized sand dunes and lake terraces. Slopes are short and are convex to concave. The present vegetation in most areas of the Yenrab soil is mainly Indian ricegrass, fourwing saltbush, rabbitbrush, and winterfat. Badlands are mostly barren. Elevation is 4,200 to 5,000 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit is about 60 percent Yenrab fine sand, 2 to 15 percent slopes, on stabilized sand dunes; 25 percent Badlands; and 15 percent other soils, Playas, and Dune land. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Yenrab soil is very deep and is somewhat excessively drained. It formed in eolian sands derived from mixed rock sources. Typically, the surface layer is pale brown fine sand about 15 inches thick. The underlying material to a depth of 60 inches or more is light yellowish brown fine sand. In some areas the surface layer is loamy fine sand.

Badlands are gently sloping to moderately steep, mostly barren areas dissected by many intermittent drainage channels. They are derived from salty lacustrine deposits of stratified very fine sand, silt, and clay. Runoff is rapid, and the hazard of water erosion is severe. The hazard of wind erosion is moderate or severe.

Included in mapping are small areas of the loamy Tooele soils on lake terraces, the gravelly Izamatch soils on lake terraces, and areas of Playas and Dune land.

Permeability is rapid in the Yenrab soil. Available water capacity is low (about 3.0 to 4.5 inches). The water-supplying capacity is 2.5 to 4.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 1 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is very severe.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Yenrab soil is about 40 percent perennial grasses, 10 percent forbs, and 50 percent shrubs. Important plant species are Indian ricegrass, fourwing saltbush, winterfat, and Mormon tea.

The suitability for livestock grazing on the Yenrab soil is only fair because of moderate forage production.

The suitability for rangeland seeding is very poor. The main limitations are the low precipitation and the texture of the surface layer. Seeding is generally not recommended.

The land capability classification of the Yenrab soil is VIIs, nonirrigated. The range site is Desert Sand (Fourwing Saltbush). The land capability classification of

the Badlands is VIII. No range site is assigned for the Badlands.

75—Yenrab-Tooele complex, saline, 0 to 15 percent slopes. This map unit is on stabilized sand dunes and lake terraces. Slopes are short and are convex to concave on the Yenrab soil. They are long and are linear or slightly convex on the Tooele soil. The present vegetation on the Yenrab soil is cheatgrass, black greasewood, Indian ricegrass, winterfat, and needleandthread. The present vegetation on the Tooele soil is black greasewood, cheatgrass, gray molly, and shadscale. Elevation is 4,300 to 4,700 feet. The average annual precipitation is 6 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average frost-free period is 120 to 160 days.

This unit is about 50 percent Yenrab loamy fine sand, saline, 2 to 15 percent slopes, on stabilized sand dunes; 35 percent Tooele fine sandy loam, saline, 0 to 5 percent slopes, on lake terraces; and 15 percent other soils and Dune land. The components of the unit are so intricately intermingled that it was not practical to map them separately at the scale used.

The Yenrab soil is very deep and is somewhat excessively drained. It formed in eolian sands derived from mixed rock sources. Typically, the surface layer is very pale brown loamy fine sand about 5 inches thick. The underlying material to a depth of 60 inches or more is very pale brown fine sand. In some areas the surface layer is fine sand.

The Tooele soil is very deep and is well drained. It formed in eolian material, lacustrine sediments, and alluvium derived from mixed rock sources. Typically, the surface layer is pale brown fine sandy loam about 10 inches thick. The underlying material to a depth of 60 inches or more is very pale brown fine sandy loam. In some areas the surface layer is silt loam, very fine sandy loam, or loam. In other areas gravelly or sandy layers are below a depth of 30 inches.

Included in mapping are small areas of the loamy Tooele soils under shadscale, the gravelly Cliffdown soils, the somewhat excessively drained Berent soils on stabilized sand dunes under Utah juniper, and areas of Dune land.

Permeability is rapid in the Yenrab soil. Available water capacity is low (about 3.0 to 4.5 inches). The water-supplying capacity is 2.5 to 4.5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is less than 1 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of wind erosion is severe.

Permeability is moderately rapid in the Tooele soil. Available water capacity is low (about 3.0 to 5.5 inches). The water-supplying capacity is 3 to 5 inches. Effective rooting depth is 60 inches or more. The content of organic matter in the surface layer is 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used as rangeland or for wildlife habitat.

The potential plant community on the Yenrab soil is about 50 percent perennial grasses, 5 percent forbs, and 45 percent shrubs. Important plant species are Indian ricegrass, fourwing saltbush, Douglas rabbitbrush, alkali sacaton, and black greasewood.

The potential plant community on the Tooele soil is about 25 percent perennial grasses, 10 percent forbs, and 65 percent shrubs. Important plant species are black greasewood, bottlebrush squirreltail, seepweed, and alkali sacaton.

The suitability for livestock grazing on the Yenrab soil is only fair because of moderate forage production. The suitability for livestock grazing on the Tooele soil is poor because of low forage production and the relative unpalatability of the dominant plants.

The suitability for rangeland seeding is very poor. The main limitation is low precipitation. The content of salt and alkali is a limitation on the Tooele soil. Seeding is generally not recommended.

The land capability classification is VIIs, nonirrigated. The range site for the Yenrab soil is Desert Alkali Sand (Fourwing Saltbush). The range site for the Tooele soil is Alkali Flat (Black Greasewood).

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Important Farmland

None of the map units in the survey area meet the requirements for prime farmland because of inadequate precipitation, insufficient water for irrigation, high alkalinity, high salinity, or steep slopes. Some map units, however, meet the requirements for farmland of statewide importance. This is land that is important for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land were determined by the appropriate State agencies. Generally, farmland of statewide importance includes areas that are nearly prime farmland and that produce high yields of crops in an economic manner when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmland if conditions are favorable.

Farmland of statewide importance commonly receives an adequate and dependable supply of moisture from irrigation. Temperature and growing season are favorable, and the level of acidity or alkalinity is acceptable. This farmland is not excessively erodible or saturated with water for long periods and is not flooded during the growing season. Slope ranges mainly from 0 to 15 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as farmland of statewide importance if these limitations are overcome by drainage, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of the corrective measures. More information on the criteria for farmland of statewide importance is available at the local office of the Natural Resources Conservation Service.

About 900,000 acres in the survey area, or about 17 percent of the total acreage, would meet the requirements for farmland of statewide importance if an adequate and dependable supply of irrigation water were available.

The map units listed at the end of this section meet the soil requirements for farmland of statewide importance if they are irrigated. On some soils included in the list, measures have been used to overcome a hazard or limitation, such as flooding, wetness, or droughtiness. The location of each map unit is shown on the detailed soil maps. Soil qualities that affect use and management are described under the heading "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

1	Abela gravelly loam, 2 to 8 percent slopes
6	Birdow loam, 1 to 4 percent slopes
8	Bramwell silt loam, 0 to 2 percent slopes
12	Cliffdown gravelly sandy loam, 2 to 15 percent slopes
15	Doyce loam, 2 to 8 percent slopes
19	Erda silt loam, 1 to 5 percent slopes
21	Hiko Peak gravelly loam, 2 to 15 percent slopes
31	Kanosh loam, 0 to 2 percent slopes
33	Kapod gravelly loam, 2 to 10 percent slopes
37	Lakewin gravelly loam, 1 to 5 percent slopes
41	Manassa silt loam, 0 to 3 percent slopes
42	Medburn fine sandy loam, 2 to 8 percent slopes
43	Medburn fine sandy loam, saline, 2 to 4 percent slopes
64	Taylorsflat loam, 1 to 5 percent slopes
65	Taylorsflat loam, saline, 0 to 3 percent slopes
66	Timpie silt loam, 0 to 3 percent slopes
67	Timpie silt loam, saline, 0 to 4 percent slopes
68	Timpie-Tooele complex, saline, 0 to 5 percent slopes
69	Tooele fine sandy loam, 0 to 5 percent slopes
70	Tooele fine sandy loam, saline, 0 to 5 percent slopes

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

About 26,000 acres in the survey area is used as irrigated cropland, and 10,000 acres is used for irrigated pastures or sod farms. About 7,000 acres is used as nonirrigated cropland. The majority of the irrigated cropland is in the Grantsville, Erda, and Tooele areas, and the nonirrigated cropland is in the Hickman Bench, Tooele, and Erda areas. The milder climate and higher precipitation of Grantsville-Tooele Valley make this area more favorable than the rest of the survey area for the production of commercial crops.

The potential of some of the soils for the increased production of crops is good. The use of adapted crops and pasture plants and the proper management of irrigation water could increase production. Some areas have soils that have a high water table or are saline or alkali, or both. Maintaining a drainage system and properly managing irrigation are necessary to maintain crop production on the wet Bramwell and Kanosh soils. Proper irrigation management helps to leach salts and alkali in areas of some soils, such as Manassa, Timpie, Tooele, and Taylorsflat soils.

The main irrigated crops in the survey area are alfalfa, small grain, and some corn silage. The most productive soils for these crops are Erda, Bramwell, Kanosh, and Birdow soils in the Erda and Grantsville areas. A large percentage of small grain and alfalfa is used locally as supplemental feed for livestock. Management of irrigation water is the major management concern in these areas. Most of the irrigation delivery systems have been improved. The majority of the cropland is sprinkler irrigated.

General management needed for crops and for hay and pasture is suggested in this section. The system of land capability classification used by the Natural Resources Conservation Service is explained, and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils generally are grouped at three levels—capability class, subclass, and unit (USDA, 1961). Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in the yields table.

Rangeland

Rangeland is an important resource in the survey area. A large portion of the survey area is used as rangeland. Perennial grasses, shrubs, and forbs are the dominant vegetation, but some areas support a cover of aspen, maple, oak, and coniferous trees.

Rangeland is used primarily for grazing by cattle and sheep in spring and fall. The warmer areas are used as winter range for sheep and cattle. The mountain and high mountain areas are used for summer range. Stock water is generally adequate and is supplemented by streams, springs, reservoirs, or wells.

Much of the acreage that was formerly open native grassland is now covered by annuals and shrubs. Excessive grazing in the past has resulted in a deteriorated range condition throughout much of the survey area. Juniper and pinyon trees and woody shrubs, such as sagebrush and greasewood, have invaded or increased in density to nearly closed stands. As a result of excessive grazing and repeated wildfires, cheatgrass is the dominant type of vegetation.

The productivity of rangeland can be increased by using such management practices as planned grazing systems, deferred grazing, brush management, fencing, water development, and reseeding. The practices used or recommended for use should include consideration of the soils, the range site, and the specific type of operation.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 6 shows, for each soil, the range site or woodland site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. Explanation of the column headings in table 6 follows.

A *site* is a distinctive kind of rangeland or grazeable woodland that produces a characteristic natural plant community that differs from natural plant communities on other sites in kind, amount, and proportion of plants. The relationship between soils and vegetation was ascertained during this survey; thus, range sites or woodland sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on productivity. Soil reaction, salt content, and a seasonal high water table are also important. A woodland site has at least 10 percent potential canopy cover of trees.

Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, mainly because of low available soil moisture.

Dry weight is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under *composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community in a given use.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimal production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Climatic Regimes and Their Effect on Range

Precipitation and climate are important environmental factors influencing the kind, amount, and distribution of vegetation. Plants growing on the range in different

parts of the survey area are affected by differences in the kind of soil and by differences in climate.

The climate ranges from arid in the salt flats near the Great Salt Lake to subalpine in the higher mountains. Average annual precipitation ranges from about 4 inches in the salt flats near Wendover to more than 35 inches in the high mountains.

Five distinct climatic regimes are recognized in the survey area. These regimes are determined on the basis of differences in the amount of moisture received, the average annual temperature, and the length of the growing season. In addition, some sites are azonal, where the influence of flooding, a high water table, or some other factor is strong enough to override climate as a controlling factor. The climatic regimes in the survey area are Desert, Semidesert, Upland, Mountain, and High Mountain.

Desert climatic regime.—In this regime, the average annual precipitation ranges from 6 to 8 inches and the average annual air temperature is 45 to 52 degrees F. The average frost-free period is 100 to 180 days. Elevations range from 4,200 to 6,000 feet. The range sites in this climatic regime are Desert Alkali Bench (Bud Sagebrush), Desert Alkali Sand (Fourwing Saltbush), Desert Flat (Shadscale), Desert Gravelly Loam (Shadscale), Desert Gravelly Sandy Loam (Indian Ricegrass), Desert Loam (Shadscale), Desert Oolitic Dunes (Black Greasewood), Desert Salt Flat (Sickle Saltbush), Desert Salty Silt (Pickleweed), Desert Sand (Fourwing Saltbush), Desert Sandy Loam (Shadscale), and Desert Shallow Loam (Shadscale).

Semidesert climatic regime.—In this regime, the average precipitation ranges from 8 to 12 inches and the average annual air temperature is 45 to 52 degrees F. The average frost-free period is 100 to 180 days. Elevations range from 4,200 to 7,000 feet. The range sites in this climatic regime are Semidesert Gravelly Loam (Wyoming Big Sagebrush), Semidesert Sand (Utah Juniper), Semidesert Shallow Hardpan 8 to 10 Ppt, Semidesert Shallow Hardpan (Utah Juniper), Semidesert Shallow Loam (Black Sagebrush), Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass), Semidesert Shallow Loam (Utah Juniper-Salmon Wildrye), and Semidesert Stony Loam (Black Sagebrush).

Upland climatic regime.—In this regime, the average precipitation ranges from 12 to 16 inches and the average annual air temperature is 38 to 52 degrees F. The average frost-free period is 80 to 180 days. Elevations range from 4,200 to 8,000 feet. The range or woodland sites in this climatic regime are Upland Claypan (Low Sagebrush), Upland Gravelly Loam (Mountain Big Sagebrush), Upland Loam (Mountain Big Sagebrush), Upland Sand (Indian Ricegrass), Upland Shallow Hardpan (Pinyon-Utah Juniper), Upland Shallow Loam (Black Sagebrush), Upland Shallow Loam (Pinyon-Utah Juniper), Upland Stony Loam (Pinyon-Utah Juniper), and Upland Stony Loam (Wyoming Big Sagebrush).

Mountain climatic regime.—In this regime, the average annual precipitation ranges from 16 to 22 inches and the average annual air temperature is 38 to 45 degrees F. The average frost-free period is 60 to 115 days. Elevations range from 5,200 to 10,000 feet. The range or woodland sites in this climatic regime are Mountain Gravelly Loam (Oak), Mountain Shallow Loam (Low Sagebrush), Mountain Stony Loam (Antelope Bitterbrush), and Mountain Windswept Ridge (Low Sagebrush).

High Mountain climatic regime.—In this regime, the average annual precipitation ranges from 22 to 35 inches and the average annual air temperature is 38 to 45 degrees F. The average frost-free period is 50 to 90 days. Elevations range from 6,000 to more than 10,000 feet. The range or woodland sites in this climatic regime are High Mountain Loam (Aspen) and High Mountain Stony Loam (Conifer).

Azonal areas.—Three azonal range sites are in the survey area. The average annual precipitation ranges from 6 to 14 inches, and the average annual air temperature is 45 to 52 degrees F. The average frost-free period is 110 to 180 days. Elevations range from 4,200 to 6,200 feet. Plant communities in these range sites receive additional moisture from a water table or as runoff from adjacent soils. The azonal range sites are Alkali Bottom (Alkali Sacaton), Loamy Bottom (Basin Wildrye), and Wet Saline Meadow.

Woodland Management and Productivity

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; *F*, a high content of rock fragments in the

soil; and *N*, snowpack. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, F, and N.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *productivity class.* The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class,* a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production.

Recreation

The survey area provides a wide variety of recreational activities. It includes areas that are popular for hunting of big game, such as mule deer and elk, and for hunting of game birds, such as grouse, pheasants, and waterfowl. Reservoirs, streams, and springs provide areas for fishing.

Areas of the Great Salt Lake around Stansbury Island have undeveloped sandy beaches, which are good locations for swimming and picnicking. Sand dunes near Knolls and areas around the Cedar Mountains are popular with dirt bike and dune buggy enthusiasts. The scenic mountains in the area provide opportunities for camping, picnicking, hiking, and horseback riding. The Bonneville Salt Flats Race Track is near Wendover, along the edge of salt and mud flats of the Great Salt Lake Desert.

Historic areas include the Pony Express Trail across the southern part of the survey area, the restored grist mill near Lake Point, and the gold and silver mines at Ophir and Mercur.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties generally are favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for dwellings without basements and for local roads and streets in table 10 and interpretations for septic tank absorption fields in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils are gently sloping and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

The survey area includes a variety of habitats, ranging from barren mud and salt flats, dunes, and playas to irrigated agricultural areas and forested mountains. Except for those in the barren areas, most of the soils in the survey area support vegetation that is used by wildlife to a varying extent. Most wildlife species are not confined to areas of a particular soil or group of soils.

The mountainous areas in the eastern half of the survey area and along the extreme western border

provide summer habitat for mule deer. Winter habitat for mule deer is in the areas of southern exposure in the foothills and on the windswept lower ridges. Other important wildlife species in the mountainous areas include mountain cottontail, mountain lion, blue grouse, broad-tailed hummingbird, Stellar's jay, boreal chorus frog, and gopher snake.

The openland areas in the uplands include most of the farmland in the survey area. These areas provide seasonal habitat for many of the species that also inhabit the mountainous areas and for other species, such as badger, coyote, Townsend ground squirrel, mourning dove, horned lark, Swainson's hawk, Great Basin spadefoot toad, and western long-nosed snake.

Wetlands and riparian zones and adjacent areas provide diverse habitat for wildlife. Small but highly valuable areas of wetlands and riparian zones are scattered throughout the survey area. Extensive wetlands are along the southern shore of the Great Salt Lake. Thousands of waterfowl and shore birds utilize these wetlands for nesting and brooding each year during their migrations. Species include snow goose, mallard, cinnamon teal, white pelican, great egret, and sandhill crane. Other wildlife species that inhabit these areas include raccoon, striped skunk, meadow vole, leopard frog, and wandering garter snake.

Semidesert areas provide habitat for several species, including mule deer, antelope, lacktail jackrabbit, Ord kangaroo rat, sage grouse, sage thrasher, horned lark, and side-blotched lizard.

The mud and salt flats and playas are generally devoid of vegetation, but these areas along with adjacent areas are an important part of the ecosystem. They are inhabited by invertebrates, such as insects. The fringe areas are used by a variety of species.

Streams and reservoirs in the survey area are concentrated in the mountainous areas. Important fish species include rainbow trout, cutthroat trout, and other nongame fish. The Lahontan cutthroat trout inhabits mountain streams in the extreme western part of the survey area.

The bald eagle has been observed in the survey area. A population of bald eagles winters in the Tooele and Rush Valleys in the eastern part of the survey area. The survey area also contains potential habitat for the peregrine falcon. In recent years, peregrine falcons have been released from hack sites. A pair of these birds has been successfully nesting in Salt Lake City for several years.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are wheat and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, tall wheatgrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface

stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are Indian ricegrass, bluebunch wheatgrass, crested wheatgrass, galleta, globemallow, and lupine.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs and other woody plants are mountainmahogany, bitterbrush, sagebrush, shadscale, winterfat, Gambel oak, and aspen.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, cattails, saltgrass, alkali sacaton, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds. Extensive areas of mud and salt flats and playas are seasonally covered with shallow water. The Great Salt Lake has broad areas of water that are less than 5 feet deep.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include kit fox, deer mouse, ring-necked pheasant, western kingbird, vesper sparrow, red-tailed hawk, and western fence lizard.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants, or both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include mule deer, porcupine, great horned owl, Cooper's hawk, downy woodpecker, spotted frog, and Utah mountain kingsnake. In the survey area, this habitat is primarily in the mountainous areas.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are raccoon, marsh hawk, Canada goose, American avocet, lesser yellowlegs, bullfrog, and wandering garter snake.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include antelope, mule deer, sage grouse, black-throated sparrow, and Great Basin spadefoot toad.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates

were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features generally are favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills generally are limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features generally are favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the

limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants.

Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel, or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the taxonomic unit descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is as much as 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils generally is preferred for topsoil because of its organic matter content.

Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features generally are favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even more than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of soil blowing, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features listed in tables are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each taxonomic unit under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by

converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Tables 15 and 16 show estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

In table 15, *depth* to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each taxonomic unit under the heading "Soil Series and Their Morphology."

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

Organic matter is the plant and animal residue in the

soil at various stages of decomposition. In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, very fine sand, sand, and organic matter (as much as 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion.

Erosion factor Kf also indicates the susceptibility of a soil to sheet and rill erosion, but the estimates are based only on the fine-earth fraction of the soil. Rocks and rock fragments are not considered.

Erosion factor T is an estimate of the maximum average rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. Soils are grouped according to the following distinctions:

1. Coarse sands, fine sands, and very fine sands. These soils generally are not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Wind erodibility index is used in the wind erosion equation (WEQ). The index number indicates the amount of soil lost in tons per acre per year.

In table 16, *depth* to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each taxonomic unit under the heading "Soil Series and Their Morphology."

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Cation-exchange capacity is the total amount of cations held in a soil in such a way that they can be removed only by exchanging with another cation in the natural soil solution. Cation-exchange capacity is a measure of the ability of a soil to retain cations, some of which are plant nutrients. Soils that have a low cation-exchange capacity hold few cations and may require more frequent applications of fertilizer than soils that have a high cation-exchange capacity. Soils that have a high cation-exchange capacity have the potential to retain cations, thus reducing the risk of ground-water pollution.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for

fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate is the percentage, by weight, of calcium carbonate in the fraction of the soil less than 2 millimeters in size.

Gypsum is the percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 2 millimeters in size. Gypsum is corrosive to concrete. Corrosion of concrete is most likely to occur in soils that are more than about 1 percent gypsum after wetting and drying.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio is an expression of the relative activity of sodium ions in exchange reactions in the soil. It is a measure of the amount of sodium relative to calcium and magnesium in the water extract from saturated soil paste.

Soil Features

Table 17 gives estimates of several important soil features. The estimates are used in land use planning that involves engineering considerations.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

A *cemented pan* is a cemented or indurated subsurface layer at a depth of 5 feet or less. Such a pan causes difficulty in excavation. Pans are classified as thin or thick. A *thin* pan is one that is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A *thick* pan is one that is more than 3 inches thick if continuously indurated or more than 18 inches thick if it is discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Water Features

Table 18 gives estimates of several important water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low

runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflow from streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered to be flooding. Standing water in swamps and marshes or in closed depressional areas is considered to be ponding.

Table 18 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable, *rare* that it is unlikely but is possible under unusual weather conditions (the chance of flooding in any year is 0 to 5 percent), *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding in any year is 5 to 50 percent), and *frequent* that it occurs often under normal weather conditions (the chance of flooding in any year is more than 50 percent).

Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that flooding is most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and level of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 18 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table usually is highest. Only saturated zones within a depth of about 6 feet are indicated. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An *artesian* water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower water table by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA, 1975). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol.* An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Orthent (*Orth*, meaning the common ones, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Torriorthents (*Torri*, meaning hot and dry, plus *orthent*, the suborder of the Entisols that has a weakly developed soil profile).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Torriorthents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, thickness of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed (calcareous), mesic Typic Torriorthents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each unit. A pedon, a small three-dimensional area of soil, that is typical of the unit in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (USDA, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (USDA, 1975). Unless otherwise stated, matrix colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the unit.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Abela Series

The Abela series consists of very deep, well drained, moderately rapidly permeable soils on fan remnants. These soils formed in alluvium derived dominantly from limestone and quartzite. Slopes range from 2 to 15

percent. Elevation is 4,600 to 6,000 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 50 degrees F.

These soils are loamy-skeletal, mixed, mesic Aridic Calcixerolls.

Typical pedon of Abela gravelly loam, 2 to 8 percent slopes; about 4 miles west of Stockton; about 2,100 feet south and 700 feet west of the northeast corner of sec. 23, T. 4 S., R. 6 W.

A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine vesicular pores; 15 percent gravel; strong effervescence (8 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.0); clear smooth boundary.

A2—4 to 10 inches; brown (10YR 5/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine tubular pores; 25 percent gravel; strong effervescence (10 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—10 to 20 inches; pale brown (10YR 6/3) gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; 25 percent gravel, 5 percent cobbles; strong effervescence (14 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—20 to 33 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; 35 percent gravel, 10 percent cobbles; violent effervescence (35 percent calcium carbonate equivalent); carbonates are disseminated, are segregated in veins, and completely coat rock fragments; strongly alkaline (pH 8.6); clear smooth boundary.

Bk2—33 to 45 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 45 percent gravel; violent effervescence (32 percent calcium carbonate equivalent); carbonates are disseminated, are segregated in veins, and completely coat rock fragments; strongly alkaline (pH 8.6); clear smooth boundary.

Bk3—45 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 45 percent gravel; violent effervescence (35 percent calcium carbonate equivalent); carbonates are disseminated, are segregated in veins, and completely coat rock fragments; strongly alkaline (pH 8.6).

The mollic epipedon is 10 to 18 inches thick. The calcic horizon is at a depth of 15 to 24 inches. The particle-size control section is 35 to 60 percent rock fragments. The content of clay is 10 to 18 percent throughout.

The A horizon has chroma of 2 or 3. It is gravelly loam or very gravelly loam. The content of rock fragments is 15 to 50 percent. Calcium carbonate equivalent is 1 to 15 percent.

The Bw horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 or 3. It is gravelly loam or very gravelly loam. The content of rock fragments is 25 to 60 percent. Calcium carbonate equivalent is 3 to 15 percent. Reaction is moderately alkaline or strongly alkaline.

The Bk horizon and the C horizon, if it occurs, have value of 6 to 8 (4 to 6 moist) and chroma of 2 or 3. They are very gravelly loam or extremely gravelly sandy loam. The content of rock fragments is 35 to 75 percent. Calcium carbonate equivalent is 15 to 40 percent. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

Amtoft Series

The Amtoft series consists of shallow, somewhat excessively drained, moderately rapidly permeable soils on hillsides and mountainsides. These soils formed in residuum and colluvium derived dominantly from limestone. Slopes range from 30 to 70 percent. Elevation is 4,250 to 7,000 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 48 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Lithic Xerollic Calciorthids.

Typical pedon of Amtoft very cobbly loam, in an area of Amtoft-Rock outcrop complex, 30 to 70 percent slopes; about 2 miles west and 8 miles north of Delle; about 400 feet west and 300 feet south of the northeast

corner of sec. 23, T. 2 N., R. 9 W.

A—0 to 3 inches; light brownish gray (10YR 6/2) very cobbly loam, grayish brown (10YR 5/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; few very fine and fine vesicular pores; 25 percent gravel, 10 percent cobbles, 5 percent stones; strong effervescence (25 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—3 to 9 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; few very fine and fine tubular pores; 25 percent gravel, 15 percent cobbles, 5 percent stones; violent effervescence (36 percent calcium carbonate equivalent); carbonates are disseminated as coatings on undersides of rock fragments; moderately alkaline (pH 8.2); clear wavy boundary.

Bk—9 to 16 inches; very pale brown (10YR 7/3) extremely cobbly loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; 45 percent gravel, 25 percent cobbles, 5 percent stones; violent effervescence (50 percent calcium carbonate equivalent); carbonates are disseminated and completely coat rock fragments; strongly alkaline (pH 8.6); abrupt irregular boundary.

R—16 inches; fractured limestone bedrock.

Bedrock is at a depth of 10 to 20 inches. The calcic horizon is at a depth of 4 to 12 inches. The particle-size control section averages 12 to 18 percent clay, 35 to 80 percent rock fragments, and more than 40 percent calcium carbonate equivalent. Thickness of the calcic horizon ranges from 6 to 10 inches. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

The A and Bw horizons have value of 5 or 6 (3 to 5 moist) and chroma of 2 or 3. The content of rock fragments is 35 to 60 percent. Calcium carbonate equivalent is 20 to 40 percent.

The Bk horizon has value of 6 to 8 (4 to 7 moist) and chroma of 2 or 3. The content of rock fragments is 60 to 80 percent. Calcium carbonate equivalent is 40 to 80 percent.

Berent Series

The Berent series consists of very deep, somewhat excessively drained, rapidly permeable soils on hummocky, stabilized sand dunes. These soils formed in eolian sands derived from sandy lacustrine deposits. Slopes range from 2 to 15 percent. Elevation is 4,500 to 5,800 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 46 to 50 degrees F.

These soils are mixed, mesic Xeric Torripsamments.

Typical pedon of Berent loamy fine sand, in an area of Berent-Hiko Peak complex, 2 to 15 percent slopes; about 10 miles west and 9 miles south of Delle; about 2,200 feet south and 500 feet west of the northeast corner of sec. 20, T. 2 S., R. 10 W.

A—0 to 6 inches; pale brown (10YR 6/3) loamy fine sand, dark grayish brown (10YR 4/2) moist; single grain; loose; many very fine and few fine roots; slight effervescence; carbonates are disseminated; moderately alkaline (pH 8.0); clear smooth boundary.

C1—6 to 16 inches; pale brown (10YR 6/3) fine sand, dark brown (10YR 4/3) moist; single grain; loose; common very fine and few fine and medium roots; slight effervescence; carbonates are disseminated; moderately alkaline (pH 8.2); gradual wavy boundary.

C2—16 to 39 inches; light yellowish brown (10YR 6/4) fine sand, dark yellowish brown (10YR 4/4) moist; single grain; loose; few very fine and fine roots; slight effervescence; carbonates are disseminated; strongly alkaline (pH 8.8); gradual wavy boundary.

C3—39 to 60 inches; light yellowish brown (10YR 6/4) fine sand, brown (10YR 5/3) moist; single grain; loose; few very fine roots; slight effervescence; carbonates are disseminated; strongly alkaline (pH 9.0).

Conductivity of the saturation extract is 0 to 2 mmhos/cm. Calcium carbonate equivalent is 1 to 15 percent.

The A horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 or 3. The content of clay is 0 to 10 percent. Reaction is slightly alkaline or moderately alkaline.

The C horizon has value of 6 or 7 (4 to 6 moist) and chroma of 2 to 4. The content of clay is 0 to 5 percent. Reaction is moderately alkaline or strongly alkaline.

Birdow Series

The Birdow series consists of very deep, well drained, moderately permeable soils on flood plains, stream terraces, and alluvial fans. These soils formed in

alluvium derived dominantly from limestone and quartzite. Slopes range from 1 to 4 percent. Elevation is 4,250 to 6,200 feet. Average annual precipitation is 10 to 14 inches, and mean annual air temperature is 45 to 48 degrees F.

These soils are fine-loamy, mixed, mesic Cumulic Haploxerolls.

Typical pedon of Birdow loam, 1 to 4 percent slopes; about 1 mile south of Stockton; about 1,800 feet west and 1,100 feet south of the northeast corner of sec. 36, T. 4 S., R. 5 W.

Ap—0 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; 5 percent gravel; slight effervescence (5 percent calcium carbonate equivalent); carbonates are disseminated; slightly alkaline (pH 7.6); clear smooth boundary.

A1—10 to 17 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; 10 percent gravel; slight effervescence (8 percent calcium carbonate equivalent); carbonates are disseminated; slightly alkaline (pH 7.8); clear wavy boundary.

A2—17 to 28 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; 5 percent gravel; strong effervescence (11 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.0); gradual wavy boundary.

Bw—28 to 50 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 5 percent gravel; strong effervescence (12 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); gradual wavy boundary.

Ab—50 to 60 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 5 percent gravel; strong effervescence (13 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4).

The mollic epipedon is 20 to 40 inches thick. The particle-size control section is 0 to 15 percent rock fragments. The content of clay is 18 to 27 percent. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The A horizon has chroma of 2 or 3. Reaction is slightly alkaline or moderately alkaline.

The B horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 or 3. Reaction is moderately alkaline or strongly alkaline.

Borvant Series

The Borvant series consists of well drained, moderately permeable soils on fan remnants. These soils are shallow over a petrocalcic horizon. They formed in alluvium derived dominantly from limestone. Slopes range from 2 to 15 percent. Elevation is 5,200 to 6,500 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic, shallow Aridic Petrocalcic Palexerolls.

Typical pedon of Borvant gravelly loam, 2 to 15 percent slopes; about 2 miles east and 6 miles south of Ibapah; about 1,500 feet north and 700 feet east of the southwest corner of sec. 13, T. 10 S., R. 19 W.

A—0 to 7 inches; brown (10YR 5/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak thin and moderately thick platy structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine, medium, and coarse roots; common very fine vesicular pores; 25 percent gravel, 5 percent cobbles; slight effervescence (18 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bk—7 to 18 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; 45 percent gravel, 10 percent cobbles; strong effervescence (50 percent calcium carbonate equivalent); carbonates are disseminated and segregated in concretions; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bkqm—18 to 25 inches; indurated, carbonate-cemented hardpan.

C—25 to 60 inches; stratified very gravelly sandy loam, very gravelly loamy sand, and carbonate- and silica-cemented hardpan.

The calcic horizon is at a depth of 7 to 14 inches. The hardpan is at a depth of 10 to 20 inches. The mollic epipedon is 7 to 14 inches thick. The particle-size control section is 35 to 60 percent rock fragments. Calcium carbonate equivalent in the particle-size control section is 40 to 60 percent. The content of clay is 10 to 18 percent. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. The content of rock fragments is 15 to 35 percent. Reaction is slightly alkaline to strongly alkaline. Calcium carbonate equivalent is 15 to 40 percent. The fine-earth fraction may be leached of calcium carbonate. Fragments less than 20 millimeters in size are the main contributors of calcium carbonate equivalent.

The Bk horizon has value of 6 or 7 (5 or 6 moist) and chroma of 2 or 3. The content of rock fragments is 35 to 60 percent. Reaction is moderately alkaline or strongly alkaline. Calcium carbonate equivalent is 40 to 60 percent.

Bramwell Series

The Bramwell series consists of very deep, somewhat poorly drained, slowly permeable soils on low lake terraces and stream terraces. These soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes range from 0 to 2 percent. Elevation is 4,200 to 5,300 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 49 to 52 degrees F.

These soils are fine-silty, mixed, mesic Aquic Calciorthids.

Typical pedon of Bramwell silt loam, 0 to 2 percent slopes; in Erda; about 1,200 feet east and 1,400 feet south of the northwest corner of sec. 32, T. 2 S., R. 4 W.

Ap—0 to 6 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak moderately thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and common fine vesicular pores; strong effervescence (18 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—6 to 20 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; strong effervescence (24 percent calcium carbonate equivalent); carbonates are disseminated and segregated in common fine soft masses; strongly alkaline (pH 8.5); clear smooth boundary.

Bk2—20 to 28 inches; light gray (10YR 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; weak fine subangular blocky structure; hard, firm, sticky and plastic; few fine and medium roots; common very fine tubular pores; violent effervescence (40 percent calcium carbonate equivalent); carbonates are disseminated and segregated in many fine soft masses; strongly alkaline (pH 9.0); gradual smooth boundary.

Bk3—28 to 36 inches; light gray (10YR 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; few fine distinct reddish yellow (7.5YR 6/6) mottles; weak fine subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; violent effervescence (22 percent calcium carbonate equivalent); carbonates are disseminated and segregated in few fine soft masses; strongly alkaline (pH 8.6); gradual smooth boundary.

C—36 to 60 inches; light gray (10YR 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; common fine distinct reddish yellow (7.5YR 5/6) mottles; massive; hard, firm, sticky and plastic; strong effervescence (22 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.6).

The calcic horizon is at a depth of 6 to 14 inches. A seasonal high water table is at a depth of 2.5 to 3.5 feet from March through July. In areas that are artificially drained, the water table is usually at a depth of 3.5 to 5.0 feet. Reaction is moderately alkaline or strongly alkaline throughout the profile.

The A horizon has hue of 10YR or 2.5Y, value of 6 or 7 (4 or 5 moist), and chroma of 1 or 2. The content of clay is 18 to 25 percent. Conductivity of the saturation extract is 4 to 16 mmhos/cm. Calcium carbonate equivalent is 15 to 25 percent.

The Bk and C horizons have hue of 10YR or 2.5Y, value of 6 or 7 (4 to 6 moist), and chroma of 2 or 3. They are silt loam or silty clay loam. The content of clay is 24 to 35 percent. Calcium carbonate equivalent is 20 to 40 percent. Conductivity of the saturation extract is 8 to 16 mmhos/cm.

Broad Series

The Broad series consists of moderately deep, well drained, moderately slowly permeable soils on

mountainsides. These soils formed in colluvium and residuum derived dominantly from quartzite and sandstone. Slopes range from 30 to 60 percent. Elevation is 5,200 to 9,000 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 42 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Calcic Argixerolls.

Typical pedon of Broad cobbly loam, in an area of Reywat-Broad-Rock outcrop association, 30 to 60 percent slopes; about 2 miles east and 12 miles south of Aragonite; about 2,200 feet east and 600 feet south of the northwest corner of sec. 15, T. 3 S., R. 10 W.

A1—0 to 4 inches; dark brown (10YR 4/3) cobbly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine vesicular pores; 15 percent gravel, 15 percent cobbles; slightly alkaline (pH 7.5); clear smooth boundary.

A2—4 to 14 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; common very fine tubular pores; 15 percent gravel, 15 percent cobbles; slightly alkaline (pH 7.5); clear wavy boundary.

Bt—14 to 23 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; common very fine and fine tubular pores; common thin clay films on faces of peds; 35 percent gravel, 15 percent cobbles; slightly alkaline (pH 7.7); clear wavy boundary.

Bk—23 to 36 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine tubular pores; 30 percent gravel, 30 percent cobbles; strong effervescence (20 percent calcium carbonate equivalent); carbonates are disseminated as coatings on rock fragments; moderately alkaline (pH 8.0); abrupt irregular boundary.

R—36 inches; fractured quartzite bedrock.

Bedrock is at a depth of 20 to 40 inches. The calcic horizon is at a depth of 23 to 36 inches. The mollic epipedon is 10 to 20 inches thick. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. It is cobbly loam or gravelly loam. The content of clay is 15 to 20 percent. The content of rock fragments is 15 to 35 percent. Reaction is neutral or slightly alkaline.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6 (3 or 4 moist), and chroma of 3 or 4. The content of clay is 27 to 35 percent. The content of rock fragments is 35 to 60 percent. Reaction is slightly alkaline or moderately alkaline.

The Bk horizon has value of 5 to 7 (4 or 5 moist) and chroma of 3 or 4. It is very cobbly loam or extremely cobbly loam. The content of clay is 15 to 20 percent. The content of rock fragments is 35 to 80 percent. Reaction is moderately alkaline or strongly alkaline. Calcium carbonate equivalent is 15 to 40 percent.

Checkett Series

The Checkett series consists of shallow, well drained, moderately permeable soils on hillsides and mountainsides. These soils formed in residuum and colluvium derived dominantly from igneous and metamorphic rocks. Slopes range from 10 to 40 percent. Elevation is 4,400 to 6,700 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 49 degrees F.

These soils are loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids.

Typical pedon of Checkett very cobbly loam, in an area of Checkett-Rock outcrop complex, 10 to 40 percent slopes; about 7 miles west and 6 miles south of Ibapah; about 600 feet north and 800 feet east of the southwest corner of sec. 18, T. 24 N., R. 70 E.

A—0 to 3 inches; pale brown (10YR 6/3) very cobbly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and common fine and few medium roots; many very fine tubular pores; 25 percent gravel, 20 percent cobbles, 5 percent stones; slight effervescence (2 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.1); clear smooth boundary.

Bt1—3 to 10 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; many very fine and few fine and medium roots; many very fine and common fine tubular pores; common thin clay films on faces of peds; 20 percent gravel, 15 percent cobbles, 5 percent stones; slight effervescence (3 percent calcium carbonate equivalent); carbonates are disseminated;

moderately alkaline (pH 8.2); gradual wavy boundary.

Bt2—10 to 14 inches; light yellowish brown (10YR 6/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and common fine tubular pores; common thin clay films on faces of peds; 30 percent gravel, 20 percent cobbles, 10 percent stones; strong effervescence (12 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.3); abrupt irregular boundary.

R—14 inches; fractured quartzite bedrock.

Bedrock is at a depth of 14 to 20 inches. The particle-size control section is 35 to 60 percent rock fragments. Conductivity of the saturation extract is 0 to 4 mmhos/cm. Reaction is moderately alkaline or strongly alkaline.

The A horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 or 3. The content of clay is 18 to 22 percent.

The Bt horizon has hue of 7.5YR or 10YR, value of 6 or 7 (4 or 5 moist), and chroma of 3 or 4. It is very cobbly loam or very cobbly clay loam. The content of clay is 22 to 30 percent.

Cliffdown Series

The Cliffdown series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils on fan remnants. These soils formed in alluvium derived dominantly from sedimentary rocks. Slopes range from 2 to 15 percent. Elevation is 4,250 to 6,000 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 47 to 52 degrees F.

These soils are loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents.

Typical pedon of Cliffdown gravelly sandy loam, 2 to 15 percent slopes; about 16 miles north of Ibapah; about 100 feet south and 800 feet west of the northeast corner of sec. 33, T. 6 S., R. 19 W.

A—0 to 5 inches; pale brown (10YR 6/3) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak thin platy structure parting to weak fine granular; slightly hard, friable, nonplastic and slightly sticky; many very fine roots; many very fine and fine vesicular pores; 25 percent gravel; strong effervescence; carbonates are disseminated; moderately alkaline (pH 8.4); clear smooth boundary.

C1—5 to 30 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonplastic and slightly sticky; many very fine roots; 35 percent gravel; strong effervescence; carbonates are disseminated; strongly alkaline (pH 8.6); gradual wavy boundary.

C2—30 to 60 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonplastic and slightly sticky; few very fine roots; 40 percent gravel, 10 percent cobbles; violent effervescence; carbonates are disseminated; strongly alkaline (pH 9.0).

Calcium carbonate equivalent is 15 to 40 percent.

The A horizon has value of 6 or 7 (4 or 5 moist) and chroma of 2 to 4. It is gravelly sandy loam or very gravelly sandy loam. The content of clay is 10 to 18 percent. The content of rock fragments is 15 to 60 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The C horizon has value of 6 or 7 (5 or 6 moist) and chroma of 2 to 4. The content of clay is 8 to 18 percent. The content of rock fragments is 35 to 60 percent. Conductivity of the saturation extract is 2 to 16 mmhos/cm.

Cristo Series

The Cristo series consists of moderately deep, well drained, moderately slowly permeable soils on mountainsides. These soils formed in residuum and colluvium derived dominantly from shale and limestone. Slopes range from 10 to 60 percent. Elevation is 6,500 to 8,800 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 41 to 43 degrees F.

These soils are fine, montmorillonitic, frigid Pachic Argixerolls.

Typical pedon of Cristo loam, 10 to 60 percent slopes; about 15 miles south and 7 miles west of Ibapah; about 1,000 feet east and 1,600 feet south of the northwest corner of sec. 8, T. 22 N., R. 70 E.

A1—0 to 2 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 10 percent gravel; neutral (pH 6.6); clear smooth boundary.

A2—2 to 9 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very

fine and few fine and medium roots; common very fine tubular pores; 10 percent gravel; neutral (pH 6.7); clear wavy boundary.

Bt1—9 to 17 inches; grayish brown (10YR 5/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; strong fine angular blocky structure; hard, firm, sticky and plastic; many very fine and few fine and medium roots; common very fine tubular pores; common thin clay films on faces of peds; 25 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt2—17 to 22 inches; grayish brown (10YR 5/2) gravelly clay loam, dark brown (10YR 3/3) moist; strong fine subangular blocky structure; hard, firm, sticky and plastic; many very fine and few fine and medium roots; common very fine tubular pores; common thin clay films on faces of peds; 30 percent gravel; neutral (pH 6.8); clear wavy boundary.

C—22 to 35 inches; pale brown (10YR 6/3) extremely gravelly clay loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; 70 percent gravel; slight effervescence (14 percent calcium carbonate equivalent); carbonates are disseminated; neutral (pH 7.3); abrupt irregular boundary.

Cr—35 to 60 inches; fractured shale.

Weathered bedrock is at a depth of 20 to 40 inches. The mollic epipedon is 20 to 35 inches thick.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 18 to 27 percent. The content of rock fragments is 0 to 15 percent.

The Bt horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 35 to 40 percent. The content of rock fragments is 15 to 35 percent.

The C horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 or 3. The content of clay is 27 to 40 percent. The content of rock fragments is 60 to 80 percent. Calcium carbonate equivalent is 1 to 15 percent. Reaction is slightly acid to slightly alkaline.

Dateman Series

The Dateman series consists of moderately deep, well drained, moderately permeable soils on mountainsides. These soils formed in residuum and colluvium derived dominantly from limestone. Slopes range from 30 to 70 percent. Elevation is 6,000 to 10,000 feet. Average annual precipitation is 22 to 35 inches, and mean annual air temperature is 35 to 45 degrees F.

These soils are loamy-skeletal, mixed Pachic Cryoborolls.

Typical pedon of Dateman gravelly loam, in an area of Lundy-Dateman-Rock outcrop association, 30 to 70 percent slopes; about 7 miles west and 9 miles south of Clover; about 300 feet east and 800 feet north of the southwest corner of sec. 33, T. 6 S., R. 6 W.

Oi—1 inch to 0; partly decomposed needles, leaves, and twigs.

A1—0 to 11 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; many very fine vesicular pores; 20 percent gravel, 5 percent cobbles; slightly acid (pH 6.4); clear smooth boundary.

A2—11 to 22 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; many very fine tubular pores; 20 percent gravel, 10 percent cobbles; neutral (pH 6.6); clear wavy boundary.

Bw—22 to 36 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; many very fine tubular pores; 25 percent gravel, 25 percent cobbles; neutral (pH 7.0); abrupt irregular boundary.

R—36 inches; fractured limestone bedrock.

The mollic epipedon is 16 to 30 inches thick. The particle-size control section is 35 to 70 percent rock fragments. Bedrock is at a depth of 20 to 40 inches. The content of clay is 18 to 27 percent.

The A horizon has value of 3 or 4 (2 or 3 moist) and chroma of 2 or 3. The content of rock fragments is 15 to 35 percent. Reaction is slightly acid or neutral.

The B horizon has chroma of 3 or 4. The content of rock fragments is 35 to 60 percent. Reaction is neutral or slightly alkaline.

Doyce Series

The Doyce series consists of very deep, well drained, moderately slowly permeable soils on fan remnants. These soils formed in alluvium derived from mixed rock sources. Slopes range from 2 to 8 percent. Elevation is 4,800 to 6,300 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 50 degrees F.

These soils are fine-loamy, mixed, mesic Aridic Calcic Argixerolls.

Typical pedon of Doyce loam, 2 to 8 percent slopes; about 2 miles south and 2 miles west of Tooele; about 1,200 feet east and 200 feet south of the northwest corner of sec. 7, T. 4 S., R. 4 W.

A1—0 to 2 inches; brown (10YR 5/3) loam, very dark brown (10YR 3/2) moist; weak moderately thick platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; common very fine tubular pores; 5 percent gravel; slightly alkaline (pH 7.4); clear smooth boundary.

A2—2 to 10 inches; brown (10YR 5/3) loam, very dark brown (10YR 3/2) moist; weak thin platy structure parting to weak fine subangular blocky; soft, friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine tubular pores; 5 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Bt—10 to 15 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and few fine and medium roots; many very fine tubular pores; many thin clay films on faces of peds and lining pores; 5 percent gravel; slightly alkaline (pH 7.4); clear wavy boundary.

Btk—15 to 21 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; very hard, friable, sticky and plastic; many very fine and few fine roots; many very fine tubular pores; many thin clay films on faces of peds and lining pores; 5 percent gravel; strong effervescence (8 percent calcium carbonate equivalent); carbonates are in soft masses and veins; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk—21 to 42 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; 5 percent gravel; violent effervescence (35 percent calcium carbonate equivalent); carbonates are disseminated and in soft masses; strongly alkaline (pH 9.0); gradual wavy boundary.

C—42 to 60 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 5 percent gravel; strong effervescence (15 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.5).

The calcic horizon is at a depth of 14 to 18 inches. The mollic epipedon is 10 to 12 inches thick. The content of rock fragments is 5 to 15 percent.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 18 to 24 percent. Reaction is neutral or slightly alkaline.

The Bt and Btk horizons have value of 5 to 7 (3 to 5 moist) and chroma of 3 or 4. The content of clay is 27 to 35 percent. Calcium carbonate equivalent in the Bt horizon is 3 to 15 percent.

The Bk and C horizons have value of 6 to 8 (5 or 6 moist) and chroma of 3 or 4. The content of clay is 18 to 27 percent. Reaction is moderately alkaline or strongly alkaline. Calcium carbonate equivalent is 15 to 40 percent in the Bk horizon and 10 to 30 percent in the C horizon. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

Dynal Series

The Dynal series consists of very deep, somewhat excessively drained, rapidly permeable soils on hummocky, stabilized sand dunes. These soils formed in eolian sands derived dominantly from calcareous, oolitic lacustrine sediments. Slopes range from 2 to 15 percent. Elevation is 4,200 to 4,250 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 48 to 52 degrees F.

These soils are carbonatic, mesic Typic Torripsamments.

Typical pedon of Dynal sand, 2 to 15 percent slopes; on the west side of Stansbury Island; about 1,000 feet south and 1,300 feet east of the northwest corner of sec. 16, T. 1 N., R. 6 W.

A—0 to 1 inch; very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) moist; single grain; loose; many very fine roots; many very fine and fine interstitial pores; violent effervescence (86 percent calcium carbonate equivalent); moderately alkaline (pH 8.2); clear smooth boundary.

C1—1 to 14 inches; very pale brown (10YR 7/3) sand, very pale brown (10YR 7/3) moist; single grain; loose; many very fine and few fine roots; many very fine and fine interstitial pores; violent effervescence (88 percent calcium carbonate equivalent); moderately alkaline (pH 8.5); gradual smooth boundary.

C2—14 to 30 inches; light gray (10YR 7/2) sand, light gray (10YR 7/2) moist; single grain; loose; few very fine roots; many very fine and fine interstitial pores;

violent effervescence (85 percent calcium carbonate equivalent); strongly alkaline (pH 8.6); gradual smooth boundary.

C3—30 to 60 inches; light gray (10YR 7/2) sand, light gray (10YR 7/2) moist; single grain; loose; many very fine and fine interstitial pores; violent effervescence (84 percent calcium carbonate equivalent); very strongly alkaline (pH 9.2).

Calcium carbonate equivalent is 40 to 90 percent. Some pedons have sand-sized gypsum crystals in the C horizon. Conductivity of the saturation extract is 0 to 8 mmhos/cm.

The A horizon has value of 6 to 8 (5 to 8 moist) and chroma of 2 or 3. Reaction is moderately alkaline or strongly alkaline.

The C horizon has value of 6 to 8 (6 to 8 moist) and chroma of 2 or 3. Reaction is strongly alkaline or very strongly alkaline.

Erda Series

The Erda series consists of very deep, well drained, moderately slowly permeable soils on fan remnants and lake terraces. These soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes range from 1 to 5 percent. Elevation is 4,250 to 6,000 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Aridic Calcixerolls.

Typical pedon of Erda silt loam, 1 to 5 percent slopes; about 1 mile east and 1 mile north of Erda; about 1,600 feet west and 100 feet south of the northeast corner of sec. 27, T. 2 S., R. 4 W.

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine vesicular pores; strong effervescence (9 percent calcium carbonate equivalent); carbonates are disseminated; slightly alkaline (pH 7.6); clear smooth boundary.

A—8 to 14 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; strong effervescence (12 percent calcium carbonate equivalent); carbonates are disseminated; slightly alkaline (pH 7.8); clear smooth boundary.

Bk1—14 to 23 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; violent effervescence (23 percent calcium carbonate equivalent); carbonates are disseminated and in soft masses; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—23 to 39 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; violent effervescence (37 percent calcium carbonate equivalent); carbonates are disseminated and in soft masses; strongly alkaline (pH 8.8); clear wavy boundary.

C—39 to 60 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; common fine distinct strong brown (7.5YR 5/6) relict mottles; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; violent effervescence (24 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.8).

The mollic epipedon is 7 to 18 inches thick. The calcic horizon is at a depth of 7 to 18 inches. The particle-size control section ranges from 18 to 27 percent clay and contains less than 15 percent fine sand or coarser sand.

The A horizon has value of 3 or 4 moist and chroma of 2 or 3. Calcium carbonate equivalent is 3 to 15 percent. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The Bk horizon has value of 6 to 8 (4 to 6 moist) and chroma of 2 to 4. Calcium carbonate equivalent is 15 to 40 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The C horizon has value of 6 to 8 (4 to 6 moist) and chroma of 2 to 4. Calcium carbonate equivalent is 10 to 35 percent. Conductivity of the saturation extract is 0 to 8 mmhos/cm.

Flygare Series

The Flygare series consists of very deep, well drained, moderately permeable soils on mountainsides. These soils formed in alluvium and colluvium derived dominantly from interbedded quartzite and limestone. Slopes range from 30 to 60 percent. Elevation is 7,200 to 10,000 feet. Average annual precipitation is 25 to 35 inches, and mean annual air temperature is 38 to 45 degrees F.

These soils are loamy-skeletal, mixed Cryic Pachic Paleborolls.

Typical pedon of Flygare cobbly loam, in an area of Flygare-Dateman-Rock outcrop association, 30 to 70 percent slopes; about 20 miles south of Ibapah; about 1,000 feet south and 1,400 feet east of the northwest corner of sec. 34, T. 12 S., R. 19 W.

A—0 to 22 inches; dark brown (10YR 3/3) cobbly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine, medium, and coarse roots; many very fine pores; 15 percent gravel, 10 percent cobbles, 5 percent stones; slightly acid (pH 6.2); clear wavy boundary.

E—22 to 36 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; many very fine and few fine, medium, and coarse roots; many very fine pores; 30 percent gravel, 15 percent cobbles, 10 percent stones; moderately acid (pH 6.0); gradual wavy boundary.

Bt—36 to 50 inches; pale brown (10YR 6/3) very cobbly sandy clay loam, brown (10YR 4/3) moist; strong fine subangular blocky structure; very hard, firm, very sticky and very plastic; many very fine and few fine roots; many very fine pores; many thin clay films on faces of peds; 30 percent gravel, 15 percent cobbles, and 10 percent stones; moderately acid (pH 6.0); gradual wavy boundary.

Bw—50 to 60 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; 40 percent gravel, 20 percent cobbles, 15 percent stones; slightly acid (pH 6.2).

The mollic epipedon is 20 to 30 inches thick. The particle-size control section is 35 to 60 percent rock fragments. Reaction is moderately acid or slightly acid.

The A horizon has value of 3 to 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 18 to 27 percent. The content of rock fragments is 15 to 35 percent.

The E horizon has hue of 10YR or 7.5YR, value of 5 to 7 (3 to 5 moist), and chroma of 2 to 4. The content of clay is 15 to 27 percent. The content of rock fragments is 35 to 60 percent.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6 (3 to 5 moist), and chroma of 2 to 4. The content of clay is 27 to 35 percent. The content of rock fragments is 35 to 60 percent.

The Bw horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 or 4. The content of clay is 18 to 27 percent. The content of rock fragments is 60 to 80 percent.

Hiko Peak Series

The Hiko Peak series consists of very deep, well drained, moderately rapidly permeable soils on fan remnants. These soils formed in alluvium derived from mixed rock sources. Slopes range from 2 to 15 percent. Elevation is 4,400 to 6,000 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 50 degrees F.

These soils are loamy-skeletal, mixed, mesic Xerollic Calciorthids.

Typical pedon of Hiko Peak gravelly loam, 2 to 15 percent slopes; about 3 miles northwest of Fivemile Pass; about 900 feet west and 100 feet north of the southeast corner of sec. 25, T. 6 S., R. 4 W.

A—0 to 4 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure parting to moderate very fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine vesicular pores; 15 percent gravel, 5 percent cobbles; strong effervescence (22 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—4 to 12 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; few very fine and fine tubular pores; 30 percent gravel, 10 percent cobbles; strong effervescence (27 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4); clear wavy boundary.

Bk1—12 to 32 inches; very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; 30 percent gravel, 10 percent cobbles; violent effervescence (38 percent calcium carbonate equivalent); carbonates are disseminated and occur as thick coatings on rock fragments; strongly alkaline (pH 8.8); gradual wavy boundary.

Bk2—32 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; 40 percent gravel, 10 percent cobbles; violent effervescence (33 percent calcium carbonate

equivalent); carbonates are disseminated and occur as thin coatings on undersides of rock fragments; strongly alkaline (pH 9.0).

The calcic horizon is at a depth of 7 to 12 inches. The particle-size control section is 35 to 70 percent rock fragments. The content of clay is 10 to 18 percent.

The A horizon has value of 5 to 7 (3 to 5 moist) and chroma of 2 or 3. It is gravelly loam or very stony loam. Calcium carbonate equivalent is 3 to 30 percent. The content of rock fragments is 15 to 50 percent. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The Bw horizon has value of 6 or 7 (4 or 5 moist) and chroma of 3 or 4. It is very gravelly loam or very stony loam. Calcium carbonate equivalent is 3 to 30 percent. The content of rock fragments is 35 to 60 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The Bk horizon has value of 6 or 7 (5 or 6 moist) and chroma of 3 or 4. It is very gravelly loam or extremely gravelly sandy loam. Calcium carbonate equivalent is 15 to 40 percent. The content of rock fragments is 35 to 70 percent. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

Hiko Springs Series

The Hiko Springs series consists of very deep, well drained, moderately rapidly permeable soils on fan remnants. These soils formed in alluvium derived dominantly from igneous and sedimentary rocks. Slopes range from 2 to 4 percent. Elevation is 5,700 to 6,000 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 51 to 53 degrees F.

These soils are coarse-loamy, mixed, mesic Typic Calciorthids.

Typical pedon of Hiko Springs gravelly sandy loam, 2 to 4 percent slopes; about 11 miles west and 6 miles south of Ibapah; about 1,500 feet west and 100 feet north of the southeast corner of sec. 18, T. 24 N., R. 69 E.

A—0 to 4 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; weak thin platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine vesicular pores; 20 percent gravel; strong effervescence (10 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—4 to 18 inches; very pale brown (10YR 7/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine tubular pores; 20 percent gravel; strong effervescence (14 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4); clear wavy boundary.

Bk1—18 to 47 inches; very pale brown (10YR 8/3) gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; 25 percent gravel; violent effervescence (36 percent calcium carbonate equivalent); carbonates are disseminated and occur as thin coatings on undersides of rock fragments; strongly alkaline (pH 8.8); clear wavy boundary.

Bk2—47 to 60 inches; very pale brown (10YR 8/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 25 percent gravel; violent effervescence (34 percent calcium carbonate equivalent); carbonates are disseminated and occur as thin coatings on undersides of rock fragments; strongly alkaline (pH 8.6).

The calcic horizon is at a depth of 12 to 20 inches. The content of clay is 10 to 18 percent.

The A and Bw horizons have value of 6 or 7 (4 or 5 moist) and chroma of 3 or 4. Calcium carbonate equivalent is 3 to 15 percent. The content of rock fragments is 15 to 25 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The Bk horizon has value of 7 or 8 (5 to 7 moist) and chroma of 3 or 4. The content of rock fragments is 15 to 35 percent. Calcium carbonate equivalent is 15 to 40 percent. Conductivity of the saturation extract is 4 to 8 mmhos/cm.

Holmes Series

The Holmes series consists of very deep, well drained, moderately permeable soils on fan remnants. These soils formed in alluvium derived dominantly from sedimentary and igneous rocks. Slopes range from 5 to 15 percent. Elevation is 6,200 to 7,500 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 40 to 43 degrees F.

These soils are loamy-skeletal, mixed, frigid Typic Argixerolls.

Typical pedon of Holmes very stony sandy loam, 5 to 15 percent slopes; about 10 miles south and 1 mile east

of Ibapah; about 250 feet west and 1,800 feet south of the northeast corner of sec. 10, T. 11 S., R. 19 W.

A—0 to 10 inches; dark brown (10YR 4/3) very stony sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine vesicular pores; 20 percent gravel, 15 percent cobbles, 15 percent stones; neutral (pH 6.6); clear wavy boundary.

Bt1—10 to 14 inches; brown (7.5YR 5/4) very stony sandy clay loam, dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; common thin clay films on faces of peds; 20 percent gravel, 15 percent cobbles, 15 percent stones; neutral (pH 6.8); clear wavy boundary.

Bt2—14 to 29 inches; light brown (7.5YR 6/4) very stony sandy clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; continuous thin clay films on faces of peds; 20 percent gravel, 15 percent cobbles, 15 percent stones; neutral (pH 6.8); gradual wavy boundary.

BC—29 to 37 inches; pink (7.5YR 7/4) very stony sandy loam, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; many very fine tubular pores; 35 percent gravel, 10 percent cobbles, 10 percent stones; neutral (pH 6.8); gradual wavy boundary.

2C—37 to 60 inches; very pale brown (10YR 7/4) extremely stony loamy coarse sand, yellowish brown (10YR 5/4) moist; single grain; loose; few very fine, fine, and medium roots; 45 percent gravel, 15 percent cobbles, 15 percent stones; slight effervescence; slightly alkaline (pH 7.4).

The mollic epipedon is 10 to 20 inches thick.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 15 to 20 percent. The content of rock fragments is 35 to 60 percent.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6 (3 or 4 moist), and chroma of 3 or 4. The content of clay is 27 to 35 percent. The content of rock fragments is 35 to 60 percent.

The BC horizon has hue of 10YR or 7.5YR, value of 6 or 7 (4 or 5 moist), and chroma of 3 or 4. The content of clay is 15 to 20 percent. The content of rock fragments is 35 to 60 percent.

The 2C horizon has hue of 10YR or 7.5YR, value of 5 to 7 (4 or 5 moist), and chroma of 3 or 4. The content of clay is 2 to 5 percent. The content of rock fragments is 60 to 80 percent.

Izamatch Series

The Izamatch series consists of very deep, somewhat excessively drained, rapidly permeable soils on lake terraces. These soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes range from 2 to 8 percent. Elevation is 4,250 to 5,300 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 51 to 53 degrees F.

These soils are sandy-skeletal, mixed, mesic Typic Torriorthents.

Typical pedon of Izamatch gravelly sandy loam, in an area of Izamatch-Cliffdown, alkali, complex, 2 to 8 percent slopes; about 16 miles north and 9 miles east of Ibapah; about 200 feet west and 800 feet north of the southeast corner of sec. 36, T. 6 S., R. 18 W.

A—0 to 3 inches; light brownish gray (10YR 6/2) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; weak moderately thick platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and few fine vesicular pores; 20 percent gravel; strong effervescence; carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—3 to 10 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; common very fine and few fine tubular pores; 20 percent gravel; strong effervescence; carbonates are disseminated and occur as thin coatings on undersides of rock fragments; strongly alkaline (pH 8.6); clear smooth boundary.

2Ck1—10 to 30 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; common very fine and few fine tubular pores; 50 percent gravel, 5 percent cobbles; strong effervescence; carbonates are disseminated and occur as thin coatings on undersides of rock fragments; moderately alkaline (pH 8.4); clear smooth boundary.

3Ck2—30 to 60 inches; pale brown (10YR 6/3) very

gravelly sand, brown (10YR 5/3) moist; single grain; loose; few very fine roots; 45 percent gravel; strong effervescence; carbonates are disseminated and occur as thin coatings on undersides of rock fragments; strongly alkaline (pH 9.0).

The A horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 or 3. Texture is gravelly sandy loam or very gravelly sandy loam. The content of clay is 8 to 18 percent. The content of rock fragments is 15 to 50 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The Bw horizon, if it occurs, has value of 5 to 7 (3 to 5 moist). It is gravelly sandy loam or very gravelly sandy loam. The content of clay is 8 to 18 percent. The content of rock fragments is 15 to 50 percent. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The 2Ck and 3Ck horizons have value of 6 to 8 (5 or 6 moist) and chroma of 2 to 4. They are very gravelly sand or very gravelly loamy sand. The content of clay is 0 to 5 percent. The content of rock fragments is 35 to 60 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

Jericho Series

The Jericho series consists of well drained, moderately rapidly permeable soils on fan remnants. These soils are shallow over a duripan. They formed in alluvium derived dominantly from igneous rocks. Slopes range from 2 to 15 percent. Elevation is 5,000 to 6,100 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 46 to 50 degrees F.

These soils are loamy-skeletal, mixed, mesic, shallow Xerollic Durorthids.

Typical pedon of Jericho gravelly sandy loam, dry, 2 to 8 percent slopes; about 9 miles south and 8 miles west of Ibapah; about 2,600 feet east and 100 feet south of the northwest corner of sec. 2, T. 23 N., R. 69 E., in White Pine County, Nevada:

A—0 to 3 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 4/3) moist; weak thin platy structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine vesicular pores; 30 percent gravel; strong effervescence (12 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4); clear smooth boundary.

Bw—3 to 9 inches; very pale brown (10YR 7/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 30 percent gravel; strong effervescence (14 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4); clear wavy boundary.

Bkq—9 to 14 inches; very pale brown (10YR 7/4) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; 50 percent gravel; strong effervescence (22 percent calcium carbonate equivalent); carbonates are disseminated and occur as coatings on rock fragments; few thin brownish silica coatings on undersides of rock fragments; strongly alkaline (pH 8.6); abrupt wavy boundary.

Bkqm—14 to 19 inches; silica- and carbonate-cemented hardpan layer; an indurated troweled surface about 1 mm thick that stops most roots; abrupt wavy boundary.

2C1—19 to 33 inches; very pale brown (10YR 7/4) extremely gravelly loamy coarse sand, yellowish brown (10YR 5/4) moist; single grain; loose; few very fine roots; 60 percent gravel, 10 percent cobbles; strong effervescence (12 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4); abrupt wavy boundary.

3C2—33 to 60 inches; stratified, indurated, silica- and carbonate-cemented hardpan and sand and gravel.

The calcic horizon is at a depth of 4 to 9 inches. The hardpan is at a depth of 14 to 20 inches. The particle-size control section is 35 to 60 percent rock fragments. The content of clay is 10 to 18 percent. Conductivity of the saturation extract is 0 to 2 mmhos/cm. Reaction is moderately alkaline or strongly alkaline.

The A horizon has value of 5 to 7 (3 to 5 moist) and chroma of 2 to 4. The content of rock fragments is 15 to 35 percent. Calcium carbonate equivalent is 3 to 15 percent.

The Bw horizon has value of 5 to 7 (4 or 5 moist) and chroma of 3 or 4. The content of rock fragments is 15 to 35 percent. Calcium carbonate equivalent is 10 to 40 percent.

The Bkq horizon has value of 6 to 8 (5 to 7 moist) and chroma of 2 to 4. The content of rock fragments is 35 to 60 percent. Calcium carbonate equivalent is 10 to 40 percent.

The 2C and 3C horizons are stratified very gravelly loamy sand, extremely gravelly loamy coarse sand, or extremely gravelly coarse sand. Buried cemented layers are common below a depth of 30 inches.

Junkett Series

The Junkett series consists of well drained, moderately slowly permeable soils on fan remnants. These soils are moderately deep over a petrocalcic horizon. They formed in alluvium derived dominantly from igneous and sedimentary rocks. Slopes range from 2 to 5 percent. Elevation is 5,900 to 6,300 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 50 degrees F.

These soils are fine-loamy, mixed, mesic Petrocalcic Xerollic Paleargids.

Typical pedon of Junkett gravelly loam, 2 to 5 percent slopes; about 12 miles south and 2 miles west of Ibapah; about 800 feet west and 2,400 feet north of the southeast corner of sec. 18, T. 11 S., R. 19 W.

A—0 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate thin platy structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine and fine vesicular pores; 25 percent gravel; slight effervescence; moderately alkaline (pH 8.0); clear smooth boundary.

Bt—5 to 11 inches; brown (7.5YR 5/4) gravelly clay loam, dark brown (7.5YR 3/4) moist; strong fine angular blocky structure; hard, friable, sticky and plastic; many very fine and fine and common medium roots; common very fine and fine and few medium tubular pores; many moderately thick clay films on faces of peds; 20 percent gravel; slight effervescence; moderately alkaline (pH 8.0); clear wavy boundary.

Btk—11 to 16 inches; light brown (7.5YR 6/4) gravelly clay loam, brown (7.5YR 4/4) moist; moderate very fine and fine angular blocky structure; hard, friable, sticky and plastic; common very fine and fine and few medium roots; common very fine and few fine tubular pores; few thin clay films on faces of peds; 15 percent gravel; strong effervescence (15 percent calcium carbonate equivalent); carbonates are disseminated and occur as coatings on rock fragments; moderately alkaline (pH 8.4); clear wavy boundary.

Bk—16 to 24 inches; very pale brown (10YR 7/3) gravelly loam, light yellowish brown (10YR 6/4) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine tubular pores; 20 percent gravel; strong effervescence (30 percent calcium carbonate equivalent); carbonates are disseminated and occur as coatings on rock fragments; strongly alkaline (pH 9.0); abrupt wavy boundary.

Bkqm—24 to 30 inches; indurated carbonate-cemented hardpan that stops most roots.

C—30 to 60 inches; stratified very gravelly sandy loam, very gravelly loamy sand, and carbonate- and silica-cemented hardpans.

The calcic horizon is at a depth of 11 to 19 inches. The hardpan is at a depth of 20 to 40 inches. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The A horizon has value of 5 or 6 (3 or 4 moist) and chroma of 3 or 4. The content of clay is 10 to 18 percent. The content of rock fragments is 15 to 35 percent. Calcium carbonate equivalent is 0 to 3 percent.

The Bt horizon has value of 5 or 6 (3 or 4 moist). The content of clay is 27 to 35 percent. The content of rock fragments is 15 to 35 percent. Calcium carbonate equivalent is 0 to 5 percent.

The Btk horizon has value of 5 or 6 (3 or 4 moist). The content of clay is 27 to 35 percent. The content of rock fragments is 15 to 35 percent. Calcium carbonate equivalent is 3 to 15 percent.

The Bk horizon has value of 7 or 8 (5 or 6 moist) and chroma of 3 or 4. The content of clay is 10 to 18 percent. The content of rock fragments is 15 to 35 percent. Calcium carbonate equivalent is 15 to 40 percent.

Kanosh Series

The Kanosh series consists of very deep, somewhat poorly drained, moderately rapidly permeable soils on low lake terraces. These soils formed in lacustrine sediments derived from mixed rock sources. Slopes range from 0 to 2 percent. Elevation is 4,200 to 4,300 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 49 to 54 degrees F.

These soils are coarse-loamy, mixed, mesic Aquic Calciorthids.

Typical pedon of Kanosh loam, in an area of Kanosh-Saltair-Logan complex, 0 to 2 percent slopes; 1 mile west of Stansbury Park; about 2,600 feet south and 20 feet west of the northeast corner of sec. 19, T. 2 S., R. 4 W.

A—0 to 4 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine vesicular pores; strong effervescence (16 percent calcium carbonate

equivalent); carbonates are disseminated and in few soft masses; strongly alkaline (pH 8.6); gradual smooth boundary.

Bk—4 to 8 inches; very pale brown (10YR 7/3) loam, grayish brown (10YR 5/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; strong effervescence (22 percent calcium carbonate equivalent); carbonates are disseminated and in few soft masses; strongly alkaline (pH 8.8); clear smooth boundary.

Bky1—8 to 20 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; strong effervescence (21 percent calcium carbonate equivalent); carbonates and gypsum are disseminated and in few soft masses; strongly alkaline (pH 9.0); gradual wavy boundary.

Bky2—20 to 27 inches; light gray (10YR 7/2) fine sandy loam, light brownish gray (10YR 6/2) moist; common fine faint light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; soft, very friable, slightly sticky; common very fine roots; many very fine tubular pores; strong effervescence (27 percent calcium carbonate equivalent); carbonates and gypsum are disseminated and in few soft masses; strongly alkaline (pH 9.0); clear wavy boundary.

Bky3—27 to 60 inches; white (10YR 8/2) fine sandy loam, light brownish gray (10YR 6/2) moist; common fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; strong effervescence (30 percent calcium carbonate equivalent); carbonates and gypsum are disseminated; strongly alkaline (pH 9.0).

The calcic horizon is at a depth of 4 to 14 inches. A seasonal high water table is at a depth of 2 to 3 feet from March through July.

The A horizon has value of 6 or 7 (4 to 6 moist) and chroma of 2 or 3. The content of clay is 8 to 18 percent. Conductivity of the saturation extract is 2 to 8 mmhos/cm. Calcium carbonate equivalent is 10 to 25 percent.

The B horizon has value of 7 or 8 (5 to 7 moist) and chroma of 2 or 3. It is fine sandy loam or loam. The content of clay is 5 to 18 percent. Carbonate concretions occur in some pedons. Conductivity of the saturation extract is 4 to 16 mmhos/cm. Calcium carbonate equivalent is 20 to 40 percent.

Kapod Series

The Kapod series consists of very deep, well drained, moderately permeable soils on fan remnants. These soils formed in alluvium derived dominantly from sandstone and limestone. Slopes range from 2 to 30 percent. Elevation is 4,600 to 6,500 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 49 degrees F.

These soils are loamy-skeletal, mixed, mesic Calcic Argixerolls.

Typical pedon of Kapod very cobbly loam, 5 to 30 percent slopes; about 9 miles south and 9 miles west of Vernon; about 1,000 feet north and 1,400 feet east of the southwest corner of sec. 11, T. 10 S., R. 7 W.

A—0 to 11 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse granular structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; many very fine and common fine and medium tubular pores; 25 percent gravel and 20 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bt1—11 to 17 inches; brown (10YR 5/3) very cobbly sandy clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and few fine roots; many very fine, common fine, and few medium tubular pores; many thin clay films on faces of peds and lining pores; 25 percent gravel, 15 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt2—17 to 25 inches; light yellowish brown (10YR 6/4) very cobbly sandy clay loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine, fine, and medium tubular pores; few thin clay films on faces of peds; 35 percent gravel, 20 percent cobbles; slightly alkaline (pH 7.4); clear wavy boundary.

Bk—25 to 60 inches; very pale brown (10YR 7/3) very cobbly sandy loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 35 percent gravel, 20 percent cobbles; strong effervescence; carbonates are disseminated and in veins; moderately alkaline (pH 8.4).

The calcic horizon is at a depth of 20 to 33 inches. The mollic epipedon is 10 to 14 inches thick. The

particle-size control section is 35 to 60 percent rock fragments.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. It is very cobbly loam, gravelly loam, or stony loam. The content of clay is 18 to 27 percent. The content of rock fragments is 15 to 60 percent. Reaction is neutral or slightly alkaline.

The Bt horizon has value of 5 or 6 (3 to 5 moist) and chroma of 3 or 4. It is very cobbly sandy clay loam or very cobbly clay loam. The content of clay is 25 to 35 percent. The content of rock fragments is 35 to 60 percent. Reaction is neutral or slightly alkaline.

The Bk horizon has value of 6 or 7 (4 to 6 moist) and chroma of 3 or 4. It is very cobbly sandy loam or very cobbly sandy clay loam. The content of clay is 10 to 27 percent. The content of rock fragments is 35 to 60 percent. Calcium carbonate equivalent is 15 to 40 percent. Reaction is slightly alkaline or moderately alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

Kilburn Series

The Kilburn series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils on fan remnants and lake terraces. These soils formed in alluvium and colluvium derived dominantly from gneiss, schist, and quartzite. Slopes range from 2 to 10 percent. Elevation is 4,250 to 4,500 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Typic Haploxerolls.

Typical pedon of Kilburn gravelly sandy loam, 2 to 10 percent slopes; about 3.0 miles west and 0.5 mile north of a ranch house; about 900 feet north and 2,400 feet east of the southwest corner of sec. 6, T. 2 N., R. 3 W.

A1—0 to 10 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; 15 percent gravel, 5 percent cobbles; neutral (pH 6.8); gradual wavy boundary.

A2—10 to 19 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; 25 percent gravel, 5 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

Bw—19 to 36 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; 30 percent gravel, 10 percent cobbles; neutral (pH 6.8); gradual wavy boundary.

C1—36 to 48 inches; pale brown (10YR 6/3) very cobbly loamy sand, brown (10YR 4/3) moist; single grain; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine tubular pores; 25 percent gravel, 15 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

C2—48 to 60 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 4/3) moist; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 35 percent gravel, 15 percent cobbles; slight effervescence; slightly alkaline (pH 7.6).

The mollic epipedon is 10 to 20 inches thick. The particle-size control section is 35 to 60 percent rock fragments.

The A horizon has value of 3 to 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 8 to 16 percent. The content of rock fragments is 15 to 35 percent.

The Bw horizon has value of 4 to 6 (3 to 5 moist) and chroma of 3 to 5. The content of clay is 10 to 18 percent. The content of rock fragments is 35 to 60 percent.

The C horizon has value of 4 to 6 (3 to 5 moist) and chroma of 3 to 5. It is very gravelly loamy sand or very cobbly loamy sand. The content of clay is 4 to 8 percent. The content of rock fragments is 35 to 60 percent. Reaction is neutral to moderately alkaline.

Lakewin Series

The Lakewin series consists of very deep, well drained, moderately rapidly permeable soils on lake terraces. These soils formed in alluvium and lacustrine sediments derived dominantly from quartzite and limestone. Slopes range from 1 to 5 percent. Elevation is 4,700 to 5,200 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 46 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Calcic Haploxerolls.

Typical pedon of Lakewin gravelly loam, 1 to 5 percent slopes; about 1.5 miles east of Stansbury Park; about 2,300 feet east and 600 feet south of the northwest corner of sec. 24, T. 2 S., R. 4 W.

A—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 25

percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw—7 to 18 inches; brown (10YR 4/3) gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; few thin clay films on faces of peds; 25 percent gravel; slight effervescence (3 percent calcium carbonate equivalent); carbonates are disseminated and in threads; neutral (pH 7.3); clear wavy boundary.

Bk1—18 to 30 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; 45 percent gravel; strong effervescence (18 percent calcium carbonate equivalent); carbonates are disseminated and occur as coatings on rock fragments; moderately alkaline (pH 8.0); clear wavy boundary.

2Bk2—30 to 60 inches; pale brown (10YR 6/3) very gravelly sand, brown (10YR 4/3) moist; single grain; loose; few very fine roots; many very fine interstitial pores; 55 percent gravel; strong effervescence (25 percent calcium carbonate equivalent); carbonates are disseminated and occur as coatings on rock fragments; moderately alkaline (pH 8.4).

The calcic horizon is at a depth of 17 to 27 inches. The mollic epipedon is 10 to 20 inches thick and includes all or part of the Bw horizon. Depth to the 2Bk horizon is 20 to 35 inches.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 16 to 22 percent. The content of rock fragments is 15 to 35 percent.

The Bw horizon has value of 4 or 5 (3 or 4 moist) and chroma of 2 or 3. The content of clay is 18 to 25 percent. The content of rock fragments is 15 to 35 percent. Reaction is neutral or slightly alkaline. Calcium carbonate equivalent is 0 to 10 percent.

The Bk horizon has value of 6 or 7 (4 to 6 moist) and chroma of 2 or 3. The content of clay is 10 to 15 percent. The content of rock fragments is 35 to 60 percent. Calcium carbonate equivalent is 15 to 40 percent. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The 2Bk horizon has value of 6 or 7 (4 to 6 moist) and chroma of 2 or 3. The content of clay is 0 to 5 percent. The content of rock fragments is 35 to 60 percent. Calcium carbonate equivalent is 15 to 40 percent. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

Lodar Series

The Lodar series consists of shallow, well drained, moderately permeable soils on mountainsides. These soils formed in residuum and colluvium derived dominantly from limestone. Slopes range from 30 to 60 percent. Elevation is 6,000 to 8,000 feet. Average annual precipitation is 12 to 16 inches, and mean annual air temperature is 45 to 50 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Lithic Calcixerolls.

Typical pedon of Lodar very cobbly loam, in an area of Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes; about 4 miles west and 15 miles south of Ibapah; about 1,300 feet north and 1,700 feet west of the southeast corner of sec. 33, T. 23 N., R. 70 E.

A1—0 to 5 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; 20 percent gravel, 15 percent cobbles, 5 percent stones; strong effervescence (28 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.1); clear smooth boundary.

A2—5 to 8 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 30 percent gravel, 15 percent cobbles, 5 percent stones; strong effervescence (32 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear wavy boundary.

Bk—8 to 16 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 30 percent gravel, 20 percent cobbles, 5 percent stones; violent effervescence (52 percent calcium carbonate equivalent); carbonates are disseminated and occur as coatings on rock fragments; moderately alkaline (pH 8.2); abrupt irregular boundary.

R—16 inches; fractured limestone bedrock.

Bedrock is at a depth of 10 to 20 inches. The thickness of the mollic epipedon and depth to the calcic horizon are 7 to 10 inches. The content of rock fragments is 35 to 60 percent. The content of clay is 18 to 27 percent. The particle-size control section averages more than 40 percent calcium carbonate equivalent.

The A horizon has value of 4 or 5 (2 or 3 moist) and

chroma of 2 or 3. Calcium carbonate equivalent is 15 to 40 percent. Reaction is slightly alkaline or moderately alkaline.

The Bk horizon has value of 5 to 7 (4 to 6 moist) and chroma of 2 or 3. Calcium carbonate equivalent is 40 to 80 percent. Reaction is moderately alkaline or strongly alkaline.

Logan Series

The Logan series consists of very deep, poorly drained, slowly permeable soils on flood plains. These soils formed in alluvium derived from mixed rock sources. Slopes are 0 to 1 percent. Elevation is 4,200 to 5,500 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 46 to 51 degrees F.

These soils are fine-silty, mesic Typic Calciaquolls.

Typical pedon of Logan silt loam, 0 to 1 percent slopes; about 1.75 miles north of Ibapah; about 600 feet west and 1,500 feet south of the northeast corner of sec. 9, T. 9 S., R. 19 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak fine granular structure; hard, friable, sticky and plastic; many very fine and few fine roots; many very fine tubular pores; strong effervescence (15 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.0); gradual wavy boundary.

A2—4 to 15 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; many very fine and few fine roots; many very fine tubular pores; strong effervescence (10 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.0); clear wavy boundary.

Bkg1—15 to 23 inches; gray (2.5Y 5/1) silty clay loam, dark gray (2.5Y 4/1) moist; weak fine subangular blocky structure; hard, friable, sticky and plastic; many very fine roots; many very fine tubular pores; strong effervescence (20 percent calcium carbonate equivalent); carbonates are disseminated and in fine masses; moderately alkaline (pH 8.0); clear wavy boundary.

Bkg2—23 to 60 inches; white (2.5Y 8/1) silty clay loam, gray (2.5Y 6/1) moist; few fine distinct dark yellowish brown (10YR 4/6) mottles; weak fine subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; many very fine tubular pores; violent effervescence (40 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.0).

The thickness of the mollic epipedon and depth to the calcic horizon are 12 to 16 inches. A seasonal high water table is at the surface to 2 feet below the surface from March through July. Reaction is moderately alkaline or strongly alkaline.

The A horizon has value of 3 or 4 (2 or 3 moist) and chroma of 1 or 2. The content of clay is 18 to 27 percent. Conductivity of the saturation extract is 2 to 4 mmhos/cm. Calcium carbonate equivalent is 10 to 25 percent.

The Bkg horizon has value of 5 to 8 (4 to 7 moist). The content of clay is 27 to 35 percent. Conductivity of the saturation extract is 0 to 4 mmhos/cm. Calcium carbonate equivalent is 15 to 40 percent.

Lundy Series

The Lundy series consists of shallow, well drained, moderately permeable soils on mountainsides. These soils formed in residuum and colluvium derived dominantly from limestone. Slopes range from 30 to 60 percent. Elevation is 6,000 to 8,500 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 40 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, frigid Lithic Calcixerolls.

Typical pedon of Lundy very cobbly loam, in an area of Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes; about 4 miles west and 15 miles south of Ibapah; about 1,000 feet north and 900 feet west of the southeast corner of sec. 33, T. 23 N., R. 70 E.

A1—0 to 2 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; 20 percent gravel, 15 percent cobbles, 5 percent stones; slight effervescence (6 percent calcium carbonate equivalent); carbonates are disseminated; slightly alkaline (pH 7.6); clear smooth boundary.

A2—2 to 11 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 20 percent gravel, 20 percent cobbles, 10 percent stones; strong effervescence (12 percent calcium carbonate equivalent); carbonates are disseminated; slightly alkaline (pH 7.8); clear wavy boundary.

Bk—11 to 18 inches; yellowish brown (10YR 5/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky; many very fine

and few fine and medium roots; many very fine tubular pores; 25 percent gravel, 20 percent cobbles, 10 percent stones; violent effervescence (48 percent calcium carbonate equivalent); carbonates are disseminated and occur as coatings on rock fragments; moderately alkaline (pH 8.1); abrupt irregular boundary.

R—18 inches; fractured limestone.

Bedrock is at a depth of 10 to 20 inches. The thickness of the mollic epipedon and depth to the calcic horizon are 7 to 16 inches. The content of rock fragments is 35 to 60 percent. The content of clay is 18 to 27 percent. The particle-size control section averages more than 40 percent calcium carbonate equivalent.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. Calcium carbonate equivalent is 3 to 40 percent.

The Bk horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 to 4. Calcium carbonate equivalent is 40 to 60 percent.

Manassa Series

The Manassa series consists of very deep, well drained, slowly permeable soils on fan remnants and lake terraces. These soils formed in alluvium and lacustrine sediments derived dominantly from limestone and sandstone. Slopes range from 0 to 3 percent. Elevation is 4,250 to 4,800 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed (calcareous), mesic Xeric Torriorthents.

Typical pedon of Manassa silt loam, 0 to 3 percent slopes; about 2 miles south of the Tooele airport; about 2,500 feet north and 1,700 feet west of the southeast corner of sec. 12, T. 3 S., R. 5 W.

A—0 to 12 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine vesicular pores; strong effervescence (6 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4); clear smooth boundary.

C1—12 to 23 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine tubular pores; strong effervescence (15 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.6); gradual wavy boundary.

C2—23 to 36 inches; very pale brown (10YR 8/3) silty clay loam, light yellowish brown (2.5Y 6/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; common very fine roots; common very fine tubular pores; strong effervescence (19 percent calcium carbonate equivalent); carbonates are disseminated; very strongly alkaline (pH 9.2); clear wavy boundary.

C3—36 to 60 inches; white (2.5Y 8/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; common medium distinct (7.5YR 5/6) relict mottles; weak medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; strong effervescence (21 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.8).

The A horizon has value of 6 or 7 (4 or 5 moist) and chroma of 2 or 3. The content of clay is 18 to 27 percent. Calcium carbonate equivalent is 3 to 15 percent. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

The C horizon has hue of 10YR or 2.5Y, value of 6 to 8 (4 to 7 moist), and chroma of 2 or 3. It is silty clay loam or silt loam. The content of clay is 18 to 35 percent. Calcium carbonate equivalent is 15 to 40 percent. Reaction is strongly alkaline or very strongly alkaline. Conductivity of the saturation extract is 4 to 16 mmhos/cm.

Medburn Series

The Medburn series consists of very deep, well drained, moderately rapidly permeable soils on lake terraces and fan remnants. These soils formed in lacustrine sediments and alluvium derived dominantly from sedimentary rocks. Slopes range from 2 to 8 percent. Elevation is 4,500 to 6,100 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 46 to 50 degrees F.

These soils are coarse-loamy, mixed (calcareous), mesic Xeric Torriorthents.

Typical pedon of Medburn fine sandy loam, 2 to 8 percent slopes; about 8.5 miles south of Aragonite; about 2,300 feet south and 250 feet east of the northwest corner of sec. 29, T. 2 S., R. 10 W.

A—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak moderately thick platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine vesicular pores; strong effervescence; carbonates are disseminated; moderately alkaline

(pH 8.0); clear smooth boundary.

Bw1—4 to 14 inches; light yellowish brown (10YR 6/4) fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine tubular pores; strong effervescence; carbonates are disseminated; moderately alkaline (pH 8.4); clear smooth boundary.

Bw2—14 to 41 inches; light yellowish brown (10YR 6/4) fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; strong effervescence; carbonates are disseminated; strongly alkaline (pH 8.8); clear wavy boundary.

C—41 to 60 inches; very pale brown (10YR 7/4)) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; strong effervescence; carbonates are disseminated; strongly alkaline (pH 9.0).

The content of clay is 5 to 18 percent. Calcium carbonate equivalent is 3 to 40 percent. The content of rock fragments is 0 to 15 percent.

The A horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 to 4. Conductivity of the saturation extract is 0 to 4 mmhos/cm. Reaction is moderately alkaline or strongly alkaline.

The Bw and C horizons have value of 6 or 7 (4 to 6 moist) and chroma of 2 to 4. Conductivity of the saturation extract is 0 to 16 mmhos/cm.

Onaqui Series

The Onaqui series consists of shallow, well drained, moderately permeable soils on mountainsides and ridges. These soils formed in colluvium and residuum derived dominantly from quartzite. Slopes range from 20 to 60 percent. Elevation is 7,000 to 10,000 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 40 to 45 degrees F.

These soils are loamy-skeletal, mixed Lithic Haploborolls.

Typical pedon of Onaqui very cobbly loam, in an area of Podmor-Onaqui-Rock outcrop association, 20 to 60 percent slopes; about 1 mile east and 12 miles south of Vernon; about 1,700 feet east and 1,800 feet south of the northwest corner of sec. 33, T. 10 S., R. 5 W.

A1—0 to 4 inches; dark brown (10YR 4/3) very cobbly loam, very dark brown (10YR 2/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; 25 percent gravel, 25 percent cobbles, 1 percent stones; slightly alkaline (pH 7.6); clear wavy boundary.

A2—4 to 15 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 3/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; common very fine and few fine tubular pores; 30 percent gravel, 35 percent cobbles; slightly alkaline (pH 7.6); abrupt irregular boundary.

R—15 inches; fractured quartzite.

Bedrock is at a depth of 10 to 20 inches. The mollic epipedon is 10 to 16 inches thick.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. It is very cobbly loam or extremely cobbly loam. The content of clay is 18 to 27 percent. The content of rock fragments is 35 to 75 percent. Reaction is neutral or slightly alkaline. Some pedons have a Bw horizon.

Podmor Series

The Podmor series consists of moderately deep, well drained, moderately permeable soils on mountainsides. These soils formed in residuum and colluvium derived dominantly from quartzite and sandstone. Slopes range from 30 to 60 percent. Elevation is 7,000 to 10,000 feet. Average annual precipitation is 16 to 22 inches, and mean annual air temperature is 40 to 45 degrees F.

These soils are loamy-skeletal, mixed Pachic Haploborolls.

Typical pedon of Podmor very cobbly loam, in an area of Podmor-Onaqui-Rock outcrop association, 20 to 60 percent slopes; about 7 miles north of Lookout Pass; about 1,300 feet west and 1,100 feet north of the southeast corner of sec. 7, T. 7 S., R. 6 W.

A1—0 to 3 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine tubular pores; 20 percent gravel, 20 percent cobbles, 2 percent stones; neutral (pH 7.0); clear smooth boundary.

A2—3 to 8 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine tubular pores; 30 percent gravel, 10 percent cobbles; slightly alkaline (pH 7.5); clear smooth boundary.

A3—8 to 16 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine and few medium roots; many very fine, common fine, and few coarse tubular pores; 40 percent gravel, 15 percent cobbles; slightly alkaline (pH 7.5); clear smooth boundary.

Bw—16 to 23 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and fine and common medium tubular pores; 30 percent gravel, 25 percent cobbles; slightly alkaline (pH 7.6); abrupt irregular boundary.

R—23 inches; fractured quartzite.

Bedrock is at a depth of 20 to 40 inches. The mollic epipedon is 16 to 27 inches thick. The particle-size control section is 35 to 60 percent rock fragments. The content of clay is 18 to 27 percent. Reaction is neutral or slightly alkaline. Some pedons have a C horizon.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3.

The B horizon has value of 5 or 6 (3 or 4 moist) and chroma of 3 or 4.

Reywat Series

The Reywat series consists of shallow, well drained, moderately slowly permeable soils on hillsides and mountainsides. These soils formed in residuum and colluvium derived dominantly from quartzite and igneous rocks. Slopes range from 30 to 60 percent. Elevation is 5,200 to 7,200 feet. Average annual precipitation is 12 to 16 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, mixed, mesic Lithic Argixerolls.

Typical pedon of Reywat very cobbly loam, in an area of Reywat-Broad-Rock outcrop association, 30 to 60 percent slopes; about 16 miles south and 2 miles east of Dugway; about 2,900 feet east and 1,200 feet north of the southwest corner of sec. 36, T. 9 S., R. 8 W.

A—0 to 2 inches; grayish brown (10YR 5/2) very cobbly loam, very dark brown (10YR 2/2) moist; weak moderately thick platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; many very fine vesicular and tubular pores; 25 percent gravel, 15 percent cobbles; neutral (pH 7.2); clear smooth boundary.

Bt1—2 to 4 inches; grayish brown (10YR 5/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate very fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine and few medium roots; common very fine and fine and few medium tubular pores; common thin clay films on faces of peds and lining pores; 30 percent gravel, 10 percent cobbles; neutral (pH 7.0); clear wavy boundary.

Bt2—4 to 11 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate very fine subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine and few medium and coarse roots; many very fine and common fine tubular pores; many thin and few moderately thick clay films on faces of peds and lining pores; 40 percent gravel, 15 percent cobbles; neutral (pH 7.0); abrupt irregular boundary.

R—11 inches; hard, fractured quartzite bedrock.

Bedrock is at a depth of 10 to 20 inches. The content of rock fragments is 35 to 60 percent.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. It is very cobbly loam or very gravelly loam. The content of clay is 15 to 20 percent. Reaction is neutral or slightly alkaline.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6 (3 or 4 moist), and chroma of 2 or 3. The content of clay is 27 to 35 percent. Reaction is neutral to moderately alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

Ridd Series

The Ridd series consists of moderately deep, well drained, moderately permeable soils on hillsides and mountainsides. These soils formed in residuum and colluvium derived dominantly from gneiss, schist, and quartzite. Slopes range from 6 to 70 percent. Elevation is 4,200 to 6,500 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 45 to 51 degrees F.

These soils are loamy-skeletal, mixed, mesic Typic Argixerolls.

Typical pedon of Ridd very stony sandy loam, in an area of Ridd-Wasatch-Rock outcrop association, 6 to 30 percent slopes; about 2 miles west of the Antelope Island ranch house; about 1,100 feet south and 1,900 feet east of the northwest corner of sec. 8, T. 2 N., R. 3 W.

A—0 to 13 inches; brown (10YR 5/3) very stony sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, very friable, slightly

sticky and slightly plastic; many very fine roots; many very fine tubular pores; 30 percent gravel, 10 percent cobbles, 10 percent stones; neutral (pH 6.8); clear smooth boundary.

Bt—13 to 22 inches; yellowish brown (10YR 5/4) very stony sandy loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; many thin clay films on faces of peds; 30 percent gravel, 10 percent cobbles, 10 percent stones; neutral (pH 7.0); clear wavy boundary.

BC—22 to 30 inches; pale brown (10YR 6/3) very stony sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; 35 percent gravel, 10 percent cobbles, 10 percent stones; neutral (pH 7.2); gradual wavy boundary.

C—30 to 36 inches; light olive brown (2.5YR 5/3) very stony sandy loam, olive brown (2.5YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; 35 percent gravel, 10 percent cobbles, 10 percent stones; neutral (pH 7.2); abrupt irregular boundary.

R—36 inches; fractured gneiss and schist.

Bedrock is at a depth of 20 to 40 inches. The mollic epipedon is 10 to 20 inches thick. The content of rock fragments is 35 to 60 percent.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 10 to 15 percent.

The Bt horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 to 4. The content of clay is 13 to 18 percent.

The BC and C horizons have hue of 10YR or 2.5Y, value of 5 to 7 (3 or 4 moist), and chroma of 3 or 4. The content of clay is 5 to 15 percent.

Saltair Series

The Saltair series consists of very deep, poorly drained, slowly permeable soils on lake plains. These soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes are 0 to 1 percent. Elevation is 4,200 to 4,300 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Typic Salorthids.

Typical pedon of Saltair silt loam, in an area of Saltair-Playas complex, 0 to 1 percent slopes; about 21 miles south and 1 mile east of Wendover; about 1,000 feet east and 800 feet south of the northwest corner of sec. 4, T. 5 S., R. 19 W.

Az—0 to 8 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine and fine roots; few very fine vesicular pores; strongly saline; strong effervescence; carbonates are disseminated; strongly alkaline (pH 8.6); gradual smooth boundary.

Cz—8 to 21 inches; white (2.5Y 8/2) silt loam, light brownish gray (2.5Y 6/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; strongly saline; strong effervescence; carbonates are disseminated; strongly alkaline (pH 9.0); clear smooth boundary.

Ckz1—21 to 32 inches; white (2.5Y 8/2) silty clay loam, light gray (2.5Y 7/2) moist; many medium prominent strong brown (7.5YR 5/6) mottles; massive; slightly hard, friable, sticky and plastic; few very fine and fine roots; many very fine and fine and common medium tubular pores; strongly saline; strong effervescence; carbonates are disseminated and segregated in concretions; very strongly alkaline (pH 9.1); clear smooth boundary.

Ckz2—32 to 44 inches; white (5Y 8/2) silty clay loam, light gray (5Y 7/2) moist; common medium distinct strong brown (7.5YR 5/6) mottles; massive; hard, friable, sticky and plastic; few very fine roots; common very fine and fine tubular pores; strongly saline; strong effervescence; carbonates are disseminated; strongly alkaline (pH 9.0); gradual wavy boundary.

Ckz3—44 to 60 inches; white (5Y 8/2) silty clay loam, light gray (5Y 7/2) moist; common medium distinct dark brown (7.5YR 4/4) mottles; massive; hard, friable, very sticky and very plastic; few very fine roots; common very fine and fine tubular pores; strongly saline; a few iron nodules; strong effervescence; carbonates are disseminated and in thin veins; strongly alkaline (pH 9.0).

In many places the surface is crusted with a thin layer of salt. A seasonal high water table is at the surface to 1 foot below the surface from March through October. Reaction is moderately alkaline to very strongly alkaline. Conductivity of the saturation extract is more than 16 mmhos/cm.

The A horizon has hue of 10YR to 5Y, value of 5 to 7 (3 to 6 moist), and chroma of 1 to 3. The content of clay is 20 to 27 percent.

The C horizon has hue of 10YR to 5Y, value of 6 to 8 (5 to 7 moist), and chroma of 1 to 3. It is silty clay loam

or silt loam. The content of clay is 20 to 35 percent.

Scalade Series

The Scalade series consists of well drained, moderately permeable soils on fan remnants. These soils are shallow over a hardpan. They formed in alluvium derived dominantly from igneous rocks. Slopes range from 2 to 5 percent. Elevation is 5,000 to 6,100 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 50 degrees F.

These soils are loamy, mixed, mesic, shallow Haploxerollic Durorthids.

Typical pedon of Scalade very fine sandy loam, moist, 2 to 5 percent slopes; about 10 miles south and 4 miles west of Ibapah; about 2,200 feet north and 2,600 feet east of the southwest corner of sec. 9, T. 23 N., R. 70 E., in White Pine County, Nevada:

A—0 to 3 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate thin platy structure; soft, very friable; many very fine and few fine and medium roots; many very fine vesicular pores; 5 percent gravel; slight effervescence (3 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—3 to 9 inches; pale brown (10YR 6/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine tubular pores; 5 percent gravel; slight effervescence (4 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); gradual wavy boundary.

Bkq—9 to 17 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, very friable; many very fine roots; many very fine tubular pores; 5 percent gravel; strong effervescence (29 percent calcium carbonate equivalent); carbonates are disseminated and in weakly cemented fragments that contain light yellowish brown (10YR 6/4) silica coatings; strongly alkaline (pH 8.6); abrupt wavy boundary.

Bkqm—17 to 24 inches; very pale brown (10YR 7/3), strongly silica- and carbonate-cemented hardpan, yellowish brown (10YR 5/4) moist; massive; very hard and very firm; few fine roots in fractures; many fine pores; very thin, discontinuous, randomly oriented, light yellowish brown (10YR 6/4) silica laminae; 30 percent gravel; strong effervescence (20 percent calcium carbonate equivalent); strongly alkaline (pH 8.6); clear wavy boundary.

2Bkq—24 to 42 inches; very pale brown (10YR 7/3), weakly silica- and carbonate-cemented, stratified gravelly loam to very gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; hard, friable; brittle; few very fine roots; many very fine pores; few fine and medium light yellowish brown (10YR 6/4) silica coatings lining pores and bridging sand grains; 30 percent gravel; strong effervescence; silica and carbonate coatings on rock fragments; strongly alkaline (pH 8.6); abrupt wavy boundary.

2C—42 to 60 inches; stratified, indurated silica- and carbonate-cemented hardpans and sand and gravel.

The hardpan is at a depth of 12 to 20 inches. The content of clay is 5 to 10 percent. The content of rock fragments is 0 to 15 percent.

The A horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 or 3. Calcium carbonate equivalent is 3 to 15 percent. Reaction is slightly alkaline or moderately alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The Bw horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 to 4. Calcium carbonate equivalent is 3 to 15 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 2 to 4 mmhos/cm.

The Bkq horizon has value of 6 or 7 (5 or 6 moist) and chroma of 3 or 4. Calcium carbonate equivalent is 15 to 40 percent. Conductivity of the saturation extract is 2 to 4 mmhos/cm.

Skumpah Series

The Skumpah series consists of very deep, well drained, moderately slowly permeable soils on lake terraces. These soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes range from 0 to 2 percent. Elevation is 4,200 to 5,050 feet. The average annual precipitation ranges from 6 to 8 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-silty, mixed, mesic Typic Natrargids.

Typical pedon of Skumpah silt loam, 0 to 2 percent slopes; about 11 miles west of Delle; about 600 feet west and 2,400 feet north of the southeast corner of sec. 31, T. 1 S., R. 11 W.

E1—0 to 1 inch; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; strong thick platy structure parting to strong thin platy; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; many very fine and fine and

common medium vesicular pores; strong effervescence; carbonates are disseminated; strongly alkaline (pH 8.5); abrupt smooth boundary.

E2—1 to 5 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; strong thin and moderately thick platy structure parting to strong very fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and few fine vesicular pores; strong effervescence; carbonates are disseminated; strongly alkaline (pH 8.5); abrupt smooth boundary.

Btn1—5 to 9 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; common dark yellowish brown (10YR 3/4) stains on faces of peds; strong medium and coarse columnar structure parting to strong fine and medium angular blocky; slightly hard, firm, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; continuous thin clay films on faces of peds; strong effervescence; carbonates are disseminated; strongly alkaline (pH 9.0); abrupt smooth boundary.

Btn2—9 to 14 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; common dark yellowish brown (10YR 3/4) stains on faces of peds; moderate medium prismatic structure parting to strong thin and moderately thick platy; slightly hard, firm, sticky and plastic; few very fine and common fine and medium roots; few very fine and common fine and medium tubular pores; many thin clay films on faces of peds; strong effervescence; carbonates are disseminated; strongly alkaline (pH 9.0); clear smooth boundary.

By—14 to 28 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; common dark yellowish brown (10YR 3/4) stains on faces of peds; strong thin and moderately thick platy structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine and fine and few medium tubular pores; common veins and flakes of gypsum; strong effervescence; carbonates are disseminated; strongly alkaline (pH 8.8); gradual smooth boundary.

Cy1—28 to 49 inches; white (2.5Y 8/2) silty clay loam, light gray (2.5Y 7/2) moist; common fine and medium distinct dark yellowish brown (10YR 4/4) relict mottles; massive; very hard, friable, sticky and plastic; few very fine and fine tubular pores; strong effervescence; carbonates are disseminated; few fine gypsum crystals; strongly alkaline (pH 8.5); gradual wavy boundary.

Cy2—49 to 60 inches; light gray (2.5Y 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; few fine and medium distinct dark yellowish brown (10YR 4/4) relict mottles; massive; very hard, friable, sticky and plastic; strong effervescence; carbonates are disseminated; many fine and medium gypsum filaments; strongly alkaline (pH 8.5).

The natric horizon is at a depth of 2 to 5 inches, and the gypsic horizon is at a depth of 9 to 20 inches. Calcium carbonate equivalent is 15 to 40 percent. A seasonal high water table is at a depth of 3.5 to more than 6.0 feet from March through July.

The E horizon has value of 6 or 7 (4 or 5 moist) and chroma of 2 or 3. The content of clay is 18 to 27 percent. Conductivity of the saturation extract is 2 to 8 mmhos/cm.

The Bt horizon has value of 5 to 7 (4 to 6 moist) and chroma of 2 to 4. The content of clay is 27 to 35 percent. Reaction is strongly alkaline or very strongly alkaline. Conductivity of the saturation extract is 4 or more mmhos/cm.

The By and C horizons have hue of 10YR or 2.5Y, value of 6 to 8 (5 to 7 moist), and chroma of 2 or 3. They are silt loam or silty clay loam. The content of clay is 18 to 35 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is more than 16 mmhos/cm.

Spager Series

The Spager series consists of somewhat excessively drained, moderately rapidly permeable soils on fan remnants. These soils are shallow over a petrocalcic horizon. They formed in alluvium derived dominantly from limestone. Slopes range from 2 to 15 percent. Elevation is 5,200 to 6,200 feet. Average annual precipitation is 8 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic, shallow Xerollic Paleorthids.

Typical pedon of Spager gravelly loam, 2 to 15 percent slopes; about 7 miles north and 2 miles east of Ibapah; about 40 feet west and 30 feet north of the southeast corner of sec. 11, T. 8 S., R. 19 W.

A—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine vesicular pores; 30 percent gravel; strong effervescence (32 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.7); clear wavy boundary.

Bk—3 to 14 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist;

weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; 40 percent gravel; violent effervescence (46 percent calcium carbonate equivalent); carbonates are disseminated and occur as coatings on undersides of rock fragments; strongly alkaline (pH 8.7); abrupt wavy boundary.

Bkqm—14 to 20 inches; indurated, carbonate-cemented hardpan.

C—20 to 60 inches; stratified very gravelly sandy loam, very gravelly loamy sand, and carbonate-cemented hardpan.

The calcic horizon is at a depth of 2 to 10 inches. Depth to the hardpan is 10 to 20 inches. The particle-size control section is 35 to 60 percent rock fragments. Calcium carbonate equivalent in the particle-size control section averages 40 to 60 percent. The content of clay is 15 to 20 percent.

The A horizon has value of 5 or 6 (3 or 4 moist) and chroma of 2 or 3. The content of rock fragments is 15 to 35 percent. Calcium carbonate equivalent is 15 to 40 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 2 mmhos/cm.

The Bk horizon has value of 6 to 8 (5 or 6 moist) and chroma of 3 or 4. The content of rock fragments is 35 to 60 percent. Calcium carbonate equivalent is 40 to 60 percent. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

Springmeyer Series

The Springmeyer series consists of very deep, well drained, moderately slowly permeable soils on fan remnants. These soils formed in alluvium derived dominantly from granite. Slopes range from 3 to 7 percent. Elevation is 5,900 to 6,500 feet. Average annual precipitation is 12 to 14 inches, and mean annual air temperature is 45 to 50 degrees F.

These soils are fine-loamy, mixed, mesic Aridic Argixerolls.

Typical pedon of Springmeyer gravelly sandy loam, 3 to 7 percent slopes; about 1.0 mile west and 11.5 miles south of Ibapah; about 300 feet east and 700 feet south of the northwest corner of sec. 21, T. 11 S., R. 19 W.

A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine vesicular pores; 15 percent gravel; neutral (pH 7.2); clear wavy boundary.

A2—4 to 14 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to moderate fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; common very fine and fine and few medium tubular pores; 15 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt1—14 to 21 inches; brown (7.5YR 5/4) gravelly sandy clay loam, dark brown (7.5YR 3/4) moist; weak fine prismatic structure parting to moderate fine subangular blocky; hard, friable, sticky and plastic; few very fine and fine roots; many very fine and few fine tubular pores; many thin clay films on faces of peds and lining pores; 20 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt2—21 to 29 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; many very fine and few fine tubular pores; common thin clay films on faces of peds and lining pores; 25 percent gravel; neutral (pH 7.0); gradual wavy boundary.

C1—29 to 42 inches; light brown (7.5YR 6/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 40 percent gravel; neutral (pH 6.8); gradual wavy boundary.

C2—42 to 53 inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; 40 percent gravel; slight effervescence; carbonates are disseminated; neutral (pH 6.6); gradual wavy boundary.

Ck—53 to 60 inches; yellowish brown (10YR 5/4) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable; 35 percent gravel; slight effervescence; carbonates are disseminated and segregated in filaments; slightly alkaline (pH 7.4).

The mollic epipedon is 9 to 15 inches thick. The particle-size control section is 15 to 35 percent rock fragments.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3. The content of clay is 10 to 20 percent. The content of rock fragments is 15 to 35 percent.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6 (3 or 4 moist), and chroma of 3 or 4. The content

of clay is 25 to 35 percent. The content of rock fragments is 15 to 35 percent.

The C horizon has hue of 10YR or 7.5YR, value of 5 or 6 (4 or 5 moist), and chroma of 3 or 4. It is very gravelly sandy loam or very gravelly loamy sand. The content of clay is 3 to 8 percent. The content of rock fragments is 35 to 60 percent.

Taylorsflat Series

The Taylorsflat series consists of very deep, well drained, moderately slowly permeable soils on fan remnants and lake terraces. These soils formed in alluvium and lacustrine sediments derived from mixed rock sources. Slopes range from 0 to 5 percent. Elevation is 4,300 to 6,000 feet. Average annual precipitation is 10 to 12 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are fine-loamy, mixed, mesic Xerollic Calciorthids.

Typical pedon of Taylorsflat loam, 1 to 5 percent slopes; about 4 miles east and 1 mile south of Vernon; about 2,700 feet west and 2,400 feet south of the northeast corner of sec. 25, T. 8 S., R. 5 W.

A—0 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak thin platy structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular pores; 5 percent gravel; strong effervescence (13 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—4 to 9 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular pores; 5 percent gravel; strong effervescence (14 percent calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4); clear smooth boundary.

Bk—9 to 51 inches; very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular pores; 5 percent gravel; violent effervescence (21 percent calcium carbonate equivalent); carbonates are disseminated and in masses; strongly alkaline (pH 8.6); clear wavy boundary.

C—51 to 60 inches; very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; 5 percent gravel; strong effervescence (15 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.6).

The calcic horizon is at a depth of 9 to 20 inches. The content of clay is 18 to 27 percent. The content of rock fragments is 0 to 15 percent.

The A horizon has value of 5 to 7 (3 to 5 moist) and chroma of 2 to 4. Calcium carbonate equivalent is 3 to 15 percent. Reaction is moderately alkaline or strongly alkaline. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

The Bw horizon has value of 6 or 7 (4 or 5 moist) and chroma of 3 or 4. Calcium carbonate equivalent is 3 to 15 percent. Reaction is moderately alkaline to very strongly alkaline. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

The Bk and C horizons have value of 6 to 8 (4 to 6 moist) and chroma of 3 or 4. Calcium carbonate equivalent is 15 to 40 percent. Reaction is strongly alkaline or very strongly alkaline. Conductivity of the saturation extract is 2 to 16 mmhos/cm.

Theriot Series

The Theriot series consists of shallow, well drained, moderately permeable soils on hillsides and mountainsides. These soils formed in residuum and colluvium derived dominantly from limestone. Slopes range from 15 to 70 percent. Elevation is 4,250 to 6,300 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 50 to 52 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Lithic Torriorthents.

Typical pedon of Theriot very stony loam, in an area of Theriot-Rock outcrop complex, 15 to 70 percent slopes; about 0.25 mile north of Wendover; about 400 feet east and 2,000 feet south of the northwest corner of sec. 17, T. 1 S., R. 19 W.

A—0 to 3 inches; light brownish gray (10YR 6/2) very stony loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; few very fine and fine vesicular pores; 25 percent gravel, 10 percent cobbles, 15 percent stones; violent effervescence; carbonates are disseminated; strongly alkaline (pH 8.6); clear smooth boundary.

C—3 to 14 inches; very pale brown (10YR 7/3) very cobbly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, friable, slightly

sticky and slightly plastic; common very fine and fine and few medium roots; 30 percent gravel, 25 percent cobbles, 5 percent stones; violent effervescence; carbonates are disseminated; strongly alkaline (pH 8.6); abrupt irregular boundary.

R—14 inches; fractured limestone bedrock.

Bedrock is at a depth of 10 to 20 inches. The particle-size control section is 50 to 80 percent rock fragments. Calcium carbonate equivalent is 40 to 60 percent. The content of clay is 8 to 14 percent. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

The A and C horizons have value of 6 or 7 (4 or 5 moist) and chroma of 2 or 3.

Timpie Series

The Timpie series consists of very deep, well drained, moderately slowly permeable soils on lake terraces and fan remnants. These soils formed in alluvium and lacustrine sediments derived dominantly from limestone and quartzite. Slopes range from 0 to 4 percent. Elevation is 4,200 to 5,300 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 47 to 52 degrees F.

These soils are fine-silty, mixed (calcareous), mesic Typic Torriorthents.

Typical pedon of Timpie silt loam, saline, 0 to 4 percent slopes; about 9 miles west of Timpie; about 500 feet west and 2,580 feet south of the northeast corner of sec. 10, T. 1 S., R. 9 W.

A—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine vesicular pores; strong effervescence (26 percent calcium calcium carbonate equivalent); carbonates are disseminated; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bw1—3 to 7 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine, medium, and coarse roots; many very fine tubular pores; strong effervescence (24 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.8); gradual smooth boundary.

Bw2—7 to 21 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine, medium, and coarse roots; many very fine tubular pores; strong effervescence (23 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 9.0); clear smooth boundary.

C—21 to 60 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine, medium, and coarse roots; many very fine tubular pores; strong effervescence (28 percent calcium carbonate equivalent); carbonates are disseminated; strongly alkaline (pH 8.8).

The content of clay is 18 to 27 percent. Calcium carbonate equivalent is 15 to 40 percent.

The A horizon has value of 6 or 7 (4 or 5 moist) and chroma of 2 or 3. Reaction is moderately alkaline to very strongly alkaline. Conductivity of the saturation extract is 0 to 8 mmhos/cm.

The Bw and C horizons have value of 6 or 7 (4 to 6 moist) and chroma of 3 or 4. Reaction is strongly alkaline or very strongly alkaline. Conductivity of the saturation extract is 8 to 32 mmhos/cm.

Tooele Series

The Tooele series consists of very deep, well drained, moderately rapidly permeable soils on lake terraces and fan remnants. These soils formed in eolian material, lacustrine sediments, and alluvium derived from mixed rock sources. Slopes range from 0 to 5 percent. Elevation is 4,200 to 6,000 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 45 to 50 degrees F.

These soils are coarse-loamy, mixed (calcareous), mesic Typic Torriorthents.

Typical pedon of Tooele fine sandy loam, 0 to 5 percent slopes; about 7 miles northwest of Delle; about 800 feet south and 1,900 feet east of the northwest corner of sec. 3, T. 1 N., R. 9 W.

A1—0 to 3 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine and few fine pores; violent effervescence; carbonates are disseminated; moderately alkaline (pH 8.4); clear smooth boundary.

A2—3 to 9 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and

few fine pores; violent effervescence; carbonates are disseminated; strongly alkaline (pH 8.8); clear smooth boundary.

Bw—9 to 17 inches; very pale brown (10YR 7/4) fine sandy loam, yellowish brown (10YR 5/4) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine pores; violent effervescence; carbonates are disseminated; strongly alkaline (pH 8.8); clear smooth boundary.

C1—17 to 33 inches; very pale brown (10YR 7/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and few fine pores; violent effervescence; carbonates are disseminated; very strongly alkaline (pH 9.2); gradual smooth boundary.

C2—33 to 42 inches; very pale brown (10YR 7/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine pores; violent effervescence; carbonates are disseminated; very strongly alkaline (pH 9.2); gradual smooth boundary.

C3—42 to 60 inches; very pale brown (10YR 7/4) fine sand, yellowish brown (10YR 5/4) moist; single grain; loose; few very fine roots; few very fine pores; strong effervescence; carbonates are disseminated; very strongly alkaline (pH 9.2).

Calcium carbonate equivalent is 15 to 40 percent. Reaction is moderately alkaline to very strongly alkaline. The particle-size control section is 5 to 15 percent clay.

The A horizon has value of 6 or 7 (4 or 5 moist) and chroma of 2 or 3. Conductivity of the saturation extract is 2 to 8 mmhos/cm.

The Bw and C horizons have value of 6 or 7 (4 or 5 moist) and chroma of 2 to 4. They are typically fine sandy loam, but fine sand is below a depth of 40 inches in some pedons. Conductivity of the saturation extract is 4 to 16 mmhos/cm.

Wasatch Series

The Wasatch series consists of very deep, excessively drained, rapidly permeable soils on fan remnants. These soils formed in alluvium derived from mixed rock sources. Slopes range from 6 to 25 percent. Elevation is 4,200 to 5,300 feet. Average annual precipitation is 14 to 16 inches, and mean annual air temperature is 46 to 52 degrees F.

These soils are sandy, mixed, mesic Entic Haploxerolls.

Typical pedon of Wasatch loamy coarse sand, in an area of Ridd-Wasatch-Rock outcrop association, 6 to 30 percent slopes; about 2 miles west of the Antelope Island ranch house; about 2,000 feet south and 1,200 feet west of the northeast corner of sec. 8, T. 2 N., R. 3 W.

A—0 to 18 inches; brown (10YR 4/3) loamy coarse sand, dark brown (10YR 3/3) moist; weak fine granular structure; soft, loose, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; 5 percent gravel; neutral (pH 6.8); gradual wavy boundary.

C1—18 to 30 inches; pale brown (10YR 6/3) sand, brown (10YR 4/3) moist; single grain; loose; many very fine roots; many very fine interstitial pores; 10 percent gravel; neutral (pH 6.8); gradual wavy boundary.

C2—30 to 42 inches; pale brown (10YR 6/3) sand, brown (10YR 4/3) moist; single grain; loose; many very fine roots; many very fine interstitial pores; 10 percent gravel; neutral (pH 7.2); gradual wavy boundary.

C3—42 to 60 inches; pale brown (10YR 6/3) sand, brown (10YR 4/3) moist; single grain; loose; common very fine roots; many very fine interstitial pores; 10 percent gravel; neutral (pH 7.0).

The mollic epipedon is 10 to 20 inches thick. The content of rock fragments is 0 to 15 percent. The content of clay is 1 to 10 percent.

The A horizon has value of 4 or 5 (2 or 3 moist) and chroma of 2 or 3.

The C horizon has value of 5 or 6 (3 or 4 moist) and chroma of 3 or 4.

Yeates Hollow Series

The Yeates Hollow series consists of very deep, well drained, slowly permeable soils on fan remnants. These soils formed in alluvium derived dominantly from quartzite and sandstone. Slopes range from 6 to 40 percent. Elevation is 5,400 to 8,000 feet. Average annual precipitation is 14 to 20 inches, and mean annual air temperature is 38 to 45 degrees F.

These soils are clayey-skeletal, montmorillonitic, frigid Typic Argixerolls.

Typical pedon of Yeates Hollow cobbly loam, 6 to 20 percent slopes; about 2 miles east of Tooele; about 2,000 feet north and 1,800 feet west of the southeast corner of sec. 24, T. 3 S., R. 4 W.

A1—0 to 4 inches; brown (10YR 4/3) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine,

medium, and coarse roots; many very fine vesicular pores; 15 percent gravel, 10 percent cobbles, 5 percent stones; slightly acid (pH 6.2); clear smooth boundary.

A2—4 to 12 inches; brown (10YR 4/3) cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; very hard, friable, sticky and plastic; many very fine and few fine, medium, and coarse roots; common very fine tubular pores; 15 percent gravel, 10 percent cobbles, 5 percent stones; slightly acid (pH 6.2); clear wavy boundary.

Bt1—12 to 22 inches; brown (7.5YR 5/4) very cobbly clay loam, brown (7.5YR 4/4) moist; strong fine angular blocky structure; extremely hard, firm, very sticky and very plastic; many very fine and few fine, medium, and coarse roots; few very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 20 percent gravel, 15 percent cobbles, 5 percent stones; slightly acid (pH 6.2); gradual wavy boundary.

Bt2—22 to 36 inches; brown (7.5YR 5/4) very cobbly clay loam, strong brown (7.5YR 4/6) moist; strong fine angular blocky structure; extremely hard, firm, very sticky and very plastic; many very fine and few fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 20 percent gravel, 15 percent cobbles, 5 percent stones; slightly acid (pH 6.2); gradual wavy boundary.

Bt3—36 to 44 inches; light brown (7.5YR 6/4) very cobbly clay loam, brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; very hard, firm, sticky and plastic; common very fine roots; common very fine tubular pores; few thin clay films on faces of peds; 30 percent gravel, 20 percent cobbles, 5 percent stones; slightly acid (pH 6.4); gradual wavy boundary.

BC—44 to 60 inches; light yellowish brown (10YR 6/4) extremely cobbly sandy clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; 40 percent gravel, 25 percent cobbles, 10 percent stones; neutral (pH 6.6).

The mollic epipedon is 10 to 20 inches thick. The particle-size control section is 35 to 60 percent rock fragments.

The A horizon has value of 3 to 5 (2 or 3 moist) and chroma of 2 or 3. It is very cobbly loam or cobbly loam. The content of clay is 18 to 27 percent. The content of rock fragments is 15 to 60 percent. Reaction is slightly acid or neutral.

The Bt horizon has value of 5 or 6 (3 to 5 moist) and chroma of 4 to 6. The content of clay is 35 to 40 percent. The content of rock fragments is 35 to 60 percent. Reaction is slightly acid or neutral.

The BC horizon has hue of 10YR or 7.5YR, value of 5 or 6 (4 or 5 moist), and chroma of 3 or 4. The content of clay is 20 to 27 percent. The content of rock fragments is 60 to 80 percent.

Yenrab Series

The Yenrab series consists of very deep, somewhat excessively drained, rapidly permeable soils on hummocky, stabilized sand dunes on fan remnants, lake terraces, and lake plains. These soils formed in eolian sands from mixed rock sources. Slopes range from 2 to 15 percent. Elevation is 4,200 to 5,000 feet. Average annual precipitation is 6 to 8 inches, and mean annual air temperature is 45 to 52 degrees F.

These soils are mixed, mesic Typic Torripsamments.

Typical pedon of Yenrab fine sand, 2 to 15 percent slopes; about 14 miles south and 10 miles west of Dugway; about 300 feet south and 2,000 feet west of the northeast corner of sec. 35, T. 9 S., R. 10 W.

A—0 to 15 inches; pale brown (10YR 6/3) fine sand, dark brown (10YR 4/3) moist; single grain; loose; common very fine and few fine roots; strong effervescence; carbonates are disseminated; moderately alkaline (pH 8.2); gradual wavy boundary.

C—15 to 60 inches; light yellowish brown (10YR 6/4) fine sand, dark yellowish brown (10YR 4/4) moist; single grain; loose; common very fine and few fine roots; strong effervescence; carbonates are disseminated; strongly alkaline (pH 8.6).

Calcium carbonate equivalent is 3 to 15 percent. Reaction is moderately alkaline or strongly alkaline.

The A horizon has value of 6 or 7 (4 or 5 moist) and chroma of 2 or 3. It is fine sand or loamy fine sand. The content of clay is 2 to 10 percent. Conductivity of the saturation extract is 0 to 4 mmhos/cm.

The C horizon has value of 6 or 7 (4 to 6 moist) and chroma of 3 or 4. The content of clay is 2 to 5 percent. Conductivity of the saturation extract is 0 to 8 mmhos/cm.

Formation of the Soils

In this section, the factors of soil formation are identified and their relationship to the soils in the survey area are described.

Soil is formed by the interaction of five major soil-forming factors. Each of these factors modifies the effects of the others. The five factors are: (1) the physical, chemical, and mineralogical composition of the parent material; (2) relief, or topography; (3) the plant and animal life in and on the soil; (4) the climate under which the soil material has accumulated and has existed since accumulation; and (5) the length of time these forces have acted on the parent material. All of these factors are important to soil formation, but some may be more important than others, depending on variations in location and local conditions.

Parent Material

Parent material is the weathered rock or unconsolidated material from which soils form. It determines to a great extent the chemical and mineralogical composition of the soils. The main sources of parent material in the survey area are Lake Bonneville sediments; eolian deposits; and alluvium, residuum, and colluvium from sedimentary, metamorphic, and igneous rocks.

Lake Bonneville sediments tend to be saline, alkali, and calcareous. The salt content is typically highest in soils on the valley bottoms. The strongly saline Saltair soils are examples. Skumpah soils on low lake terraces are alkali affected. The higher lake terraces generally represent the coarser textured old beach sediments. Izamatch soils formed in these materials.

Berent, Yenrab, and Dynal soils formed in sandy eolian deposits.

Soils that formed in sedimentary limestone in the survey area are typically strongly or very strongly calcareous. Lodar and Lundy soils are examples. Soils that formed in shale, such as Cristo soils, are generally fine textured.

Metamorphic and igneous rocks contain fewer carbonates than the sedimentary rocks. Soils that formed in metamorphic and igneous rocks are noncalcareous. Examples are Reywat, Ridd, Podmor, and Checkett soils.

Relief

Relief, or lay of the land, influences soil formation through its effect on drainage, erosion, and microclimate. The steepness and aspect of slopes, shape of the surface, and other features of relief affect the development of soils.

The nearly level and gently sloping valley floors and flood plains have relatively little relief. Some of the soils that formed in these areas are ponded or have a high water table. The saturated condition of these soils changes some of the physical and chemical properties by limiting the oxygen supply, reducing soil temperature, and facilitating the lateral movement of solutes and suspended material in the ground water. A high water table may result in the accumulation of soluble salts in the soils. This condition is characteristic of the Saltair, Kanosh, and Bramwell soils that are affected by salt and alkali. Wetness also results in an abundant production of plant matter. Soils that formed in wet areas may have a high content of organic matter. Logan soils are examples.

The foothills and mountains in the survey area consist of strongly sloping to very steep areas intermingled with small valleys and ridges. The aspect and degree of slope have been important soil-forming factors in these areas. The influence of aspect is reflected in the differences in vegetation on north- and south-facing side slopes. In general, the soils on north-facing side slopes support more vegetation, have lower soil temperatures, and have a higher content of organic matter than the soils on south-facing side slopes. Dateman soils, for example, which are dominantly on north-facing slopes, have a dark surface layer. Lodar and Amtoft soils, which are dominantly on south-facing slopes, have a thinner, lighter colored surface layer than the Dateman soils.

The steepness of slope influences soil formation through its effects on runoff and erosion. Soils on the steeper side slopes generally have a thinner surface

layer and show less development in the subsoil than the soils in nearly level areas. On very steep mountainsides, the rate of erosion may equal or exceed the rate of soil formation, particularly on south- and west-facing slopes.

Living Organisms

Plants and animals are important in developing the chemical and physical characteristics of soils. Plants strongly influence the kind and amount of organic matter and contribute to the porosity, structure, and chemical composition and fertility of the soils. Micro-organisms, insects, and burrowing animals mix the soil material, improve soil fertility, and convert vegetation from one form to another.

The lush vegetation on the wet flood plains and valley bottoms provides the organic matter that is characteristic of Logan soils. These soils have a thick, dark surface layer.

Climate

Climatic features that significantly affect soil formation are rainfall, temperature, humidity, and wind velocity. The amount of precipitation and variations in temperature influence the content of organic matter in the soil, the kind and abundance of native vegetation, the physical movement of substances in suspension or solution, and the rate of chemical processes.

In general, as rainfall increases, soil reaction decreases, depth to carbonates increases, and the translocation of clay and minerals increases. The flow of surface water caused by heavy rains or snowmelt continuously detaches, mixes, and redeposits parent material. Birdow and Logan soils formed in sediment deposited by water.

Soil temperature influences the rate of chemical processes, the physical condition of the soil, and the activities of micro-organisms. Alternate periods of freezing and thawing speed the mechanical weathering process by breaking down particles into smaller sizes. The rates of chemical and biological activity increase as the temperature increases.

Climate also influences the kind and amount of vegetation produced and thus has a direct effect on the content of organic matter in the soils. Generally, the content of organic matter increases as the amount of precipitation increases. Soils in areas that have relatively low precipitation, such as Tooele soils, typically have a thin, light colored surface layer. Soils in areas that have higher precipitation, such as Doyce soils, typically have a dark surface layer.

Wind transfers soil material from one place to another. Dynal, Yenrab, and Berent soils formed in material deposited by the wind.

Time

Time is necessary for the formation of soils. The development of distinct horizons in the soil profile requires a certain amount of time. The soils in the survey area range from young soils that exhibit little or no horizon development to older soils that have well developed profiles.

The youngest soils in the survey area are on lake terraces, in areas of eolian deposits, and on steep, actively eroding side slopes. Timpie, Medburn, Yenrab, and Tooele soils are examples. They exhibit little or no horizon development. Hiko Peak, Hiko Springs, and Taylorsflat soils, which formed in slightly older deposits than those in which the youngest soils formed, have a horizon of calcium carbonate accumulation.

The oldest and most well developed soils in the survey area are on the upper fan terraces and mountainsides. Yeates Hollow, Kapod, and Flygare soils are examples. These soils have a thick, dark surface layer and a well developed subsoil.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 2.5
Low	2.5 to 5.0
Moderate	5.0 to 7.5
High	7.5 to 10
Very high	more than 10

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable

for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs.

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Closed depression. A low area completely surrounded by higher ground and having no natural outlet.

Coarse fragments. Mineral or rock particles larger than 2 millimeters in diameter.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conductivity of the saturation extract. The standard measure of salinity. Electrical conductivity is related to the amount of salts more soluble than gypsum. (See Saline soil.)

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deep soil. A soil that is 40 to 60 inches deep over bedrock or over other material that restricts the penetration of plant roots.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Desert pavement. On a desert surface, a layer of gravel or larger fragments that was emplaced by upward movement of the underlying sediments or that remains after finer particles have been removed by running water or the wind.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained.* These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Drainageway. An area of ground at a lower elevation than the surrounding ground and in which water collects and is drained to a closed depression or lake or to a drainageway at a lower elevation. A drainageway may or may not have distinctly incised channels at its upper reaches or throughout its course.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune. A mound, ridge, or hill of loose, windblown granular material (generally sand), either bare or covered with vegetation.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic

processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess salt (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sodium (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Gypsum. A mineral consisting of hydrous calcium sulfate.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special

equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Heavy metal. Inorganic substances that are solid at ordinary temperatures and are not soluble in water. They form oxides and hydroxides that are basic. Examples are copper, iron, cadmium, zinc, manganese, lead, and arsenic.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the

surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A surface marking the floor of an extinct lake, filled in by well sorted, stratified sediments.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and

low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately deep soil. A soil that is 20 to 40 inches deep over bedrock or over other material that restricts the penetration of plant roots.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Observed rooting depth. Depth to which roots have been observed to penetrate.

Oolitic sand. Round or oblong, sand-sized fragments composed of calcium carbonate.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is

accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Quartzite, metamorphic. Rock consisting mainly of quartz that formed through recrystallization of quartz-rich sandstone or chert.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5

Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Riverwash. Unstable areas of sandy, silty, clayey, or gravelly sediments. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Rubble land. Areas in which more than 90 percent of the surface is covered by stones or boulders. Voids contain no soil material and virtually no vegetation other than lichens. The areas commonly are at the base of mountain slopes, but some are on mountain slopes as deposits of cobbles, stones, and boulders left by Pleistocene glaciation or by periglacial phenomena.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salinity. The electrical conductivity of a saline soil. Terms describing salinity, expressed in millimhos per centimeter, are as follows:

Nonsaline	0 to 2
Very slightly saline	2 to 4
Slightly saline	4 to 8
Moderately saline	8 to 16
Strongly saline	more than 16

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seeding suitability for rangeland. This suitability rating is a relative rating suggestive of the number of successful seedings that might be expected during a given period for establishment of the plants best suited to the climate and soil properties in the area. A rating of *good* indicates that a wide selection of plants may be successfully seeded in 7 years out of 10. A rating of *fair* indicates that fewer plants are adapted and can be successfully seeded in 5 to 7 years out of 10. A rating of *poor* indicates that only the most drought-tolerant plants can be successfully seeded in 4 or 5 years out of 10. A rating of *very poor* indicates that soils are generally not suitable for seeding. Seeding should only be considered under emergency circumstances, such as after construction or other disturbances.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Shallow soil. A soil that is 10 to 20 inches deep over bedrock or over other material that restricts the penetration of plant roots.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. The slope classes used in this survey are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 5 percent
Moderately sloping	5 to 15 percent
Moderately steep	15 to 30 percent
Steep	30 to 50 percent
Very steep	50 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnants of an abandoned flood plain, streambed, or valley floor that were produced during a former stage of erosion or deposition.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide

vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. A general term for the top, or highest level, of an upland feature, such as a hill or mountain. It commonly refers to a higher area that has a gentle slope and is flanked by steeper slopes.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Understory. Any plants in a forest community that grow to a height of less than 5 feet.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley. An elongated depressional area primarily developed by stream action.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Very deep soil. A soil that is more than 60 inches deep over bedrock or over other material that restricts the penetration of plant roots.

Very shallow soil. A soil that is less than 10 inches deep over bedrock or over other material that restricts the penetration of plant roots.

Water-supplying capacity. Soil moisture at the start of the growing season plus precipitation added during the growing season that is available for plant growth.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the

earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1961-90 at Dugway, Ibapah, and Tooele, Utah)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
DUGWAY:											
January----	36.7	15.1	25.9	58	-12	11	0.46	0.20	0.75	1	3.8
February---	44.9	22.8	33.8	66	-4	34	.57	.19	.91	2	2.2
March------	53.1	28.7	40.9	76	9	111	.84	.27	1.30	3	2.2
April------	62.6	35.5	49.0	84	19	282	.81	.29	1.23	2	.9
May--------	72.9	44.2	58.5	92	26	574	1.06	.36	1.71	3	.4
June-------	84.7	53.2	69.0	103	36	862	.53	.13	1.04	1	.0
July-------	94.4	61.9	78.2	105	47	1,169	.57	.11	1.00	1	.0
August-----	91.4	59.4	75.4	103	42	1,077	.61	.15	1.05	1	.0
September--	79.9	48.1	64.0	97	28	719	.72	.25	1.27	1	.0
October----	65.9	36.2	51.1	86	19	349	.81	.34	1.20	2	.1
November---	50.5	26.7	38.6	72	7	83	.59	.24	.88	2	1.9
December---	38.2	17.4	27.8	59	-8	11	.59	.17	1.02	2	4.5
Yearly:											
Average---	64.6	37.4	51.0	---	---	---	---	---	---	---	---
Extreme---	---	---	---	105	-16	---	---	---	---	---	---
Total-----	---	---	---	---	---	5,282	8.16	5.56	9.97	21	15.9
IBAPAH:											
January----	41.7	9.6	25.6	62	-20	8	0.57	0.19	0.92	1	6.2
February---	47.1	15.9	31.5	68	-14	17	.65	.24	1.09	2	5.8
March------	53.9	21.5	37.7	75	-1	65	.98	.53	1.44	3	7.3
April------	62.2	26.9	44.6	83	9	175	1.08	.44	1.70	3	4.1
May--------	71.7	33.8	52.7	89	17	392	1.32	.60	2.02	3	1.6
June-------	81.7	40.0	60.9	98	25	592	1.13	.34	2.08	2	.0
July-------	91.7	46.3	69.0	102	32	875	.79	.20	1.37	2	.0
August-----	89.9	44.6	67.2	100	28	817	.83	.20	1.43	2	.0
September--	80.1	35.3	57.7	95	17	519	.91	.31	1.64	2	.1
October----	67.6	26.2	46.9	87	7	237	.94	.28	1.53	2	1.1
November---	52.9	19.0	35.9	74	-2	45	.52	.18	.80	1	2.9
December---	42.2	10.7	26.5	64	-18	7	.50	.25	.88	1	5.3
Yearly:											
Average---	65.2	27.5	46.4	---	---	---	---	---	---	---	---
Extreme---	---	---	---	102	-24	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,749	10.20	5.94	12.40	24	34.4

See footnote at end of table.

TABLE 1.--TEMPERATURE AND PRECIPITATION--Continued

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
TOOELE:											
January----	37.5	19.5	28.5	59	-3	13	1.07	0.66	1.51	3	12.7
February---	43.2	24.2	33.7	63	2	31	1.33	.63	1.94	3	14.1
March------	50.7	30.3	40.5	72	12	109	2.33	1.36	3.19	6	16.0
April------	59.8	37.3	48.6	80	22	280	2.49	1.33	3.50	5	8.1
May--------	69.7	46.2	57.9	88	28	558	1.91	.60	2.97	4	1.8
June-------	80.1	55.2	67.6	96	37	829	1.11	.36	1.80	3	.0
July-------	88.5	63.1	75.8	98	48	1,108	.92	.31	1.54	2	.0
August-----	86.1	60.8	73.5	97	45	1,037	.94	.35	1.62	2	.0
September--	75.9	50.8	63.4	92	33	702	1.42	.32	2.29	3	.1
October----	63.3	39.9	51.6	81	22	372	1.81	.88	2.74	4	3.8
November---	48.7	29.6	39.2	69	12	88	1.69	.85	2.42	4	10.2
December---	38.3	21.0	29.6	59	0	15	1.48	.61	2.20	4	16.8
Yearly:											
Average---	61.8	39.8	50.8	---	---	---	---	---	---	---	---
Extreme---	---	---	---	99	-7	---	---	---	---	---	---
Total-----	---	---	---	---	---	5,142	18.50	14.76	22.04	43	83.6

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1961-90 at Dugway, Ibapah, and Tooele, Utah)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
DUGWAY:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 2	May 10	May 27
2 years in 10 later than--	Apr. 24	May 5	May 21
5 years in 10 later than--	Apr. 9	Apr. 27	May 10
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 7	Sept. 28	Sept. 13
2 years in 10 earlier than--	Oct. 13	Oct. 4	Sept. 18
5 years in 10 earlier than--	Oct. 26	Oct. 15	Sept. 28
IBAPAH:			
Last freezing temperature in spring:			
1 year in 10 later than--	June 6	June 25	July 5
2 years in 10 later than--	May 29	June 18	June 30
5 years in 10 later than--	May 15	June 4	June 19
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 4	Aug. 26	Aug. 18
2 years in 10 earlier than--	Sept. 10	Sept. 1	Aug. 22
5 years in 10 earlier than--	Sept. 21	Sept. 12	Aug. 31

TABLE 2.--FREEZE DATES IN SPRING AND FALL--Continued

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
TOOELE:			
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 23	May 6	May 21
2 years in 10 later than--	Apr. 15	May 1	May 16
5 years in 10 later than--	Mar. 30	Apr. 21	May 5
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 26	Oct. 8	Sept. 28
2 years in 10 earlier than--	Oct. 31	Oct. 14	Oct. 4
5 years in 10 earlier than--	Nov. 9	Oct. 27	Oct. 15

TABLE 3.--GROWING SEASON

(Recorded in the period 1961-90 at Dugway, Ibapah, and Tooele, Utah)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
DUGWAY:			
9 years in 10	169	149	116
8 years in 10	179	157	124
5 years in 10	200	172	141
2 years in 10	220	187	157
1 year in 10	231	194	166
IBAPAH:			
9 years in 10	105	72	52
8 years in 10	114	82	60
5 years in 10	130	100	74
2 years in 10	147	119	88
1 year in 10	156	129	95
TOOELE:			
9 years in 10	195	160	135
8 years in 10	205	170	144
5 years in 10	223	188	163
2 years in 10	242	206	181
1 year in 10	252	216	191

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
1	Abela gravelly loam, 2 to 8 percent slopes	23,918	0.5
2	Abela very gravelly loam, 5 to 15 percent slopes	35,924	0.7
3	Amtoft, dry-Rock outcrop complex, 30 to 70 percent slopes	84,957	1.6
4	Amtoft-Rock outcrop complex, 30 to 70 percent slopes	281,422	5.3
5	Berent-Hiko Peak complex, 2 to 15 percent slopes	42,759	0.8
6	Birdow loam, 1 to 4 percent slopes	13,669	0.3
7	Borvant gravelly loam, 2 to 15 percent slopes	63,741	1.2
8	Bramwell silt loam, 0 to 2 percent slopes	14,918	0.3
10	Broad, moist-Reywat, moist-Rock outcrop association, 30 to 60 percent slopes	17,916	0.3
11	Checkett-Rock outcrop complex, 10 to 40 percent slopes	63,718	1.2
12	Cliffdown gravelly sandy loam, 2 to 15 percent slopes	149,874	2.8
13	Cristo loam, 10 to 60 percent slopes	8,322	0.2
14	Dateman-Podmor-Rock outcrop association, 30 to 70 percent slopes	20,870	0.4
14A	Dateman-Podmor, moist-Rock outcrop association, 30 to 70 percent slopes	24,816	0.5
15	Doyce loam, 2 to 8 percent slopes	5,291	0.1
16	Dune land	29,300	0.6
17	Dynal sand, 2 to 15 percent slopes	22,921	0.4
18	Dynal-Tooele, saline, complex, 0 to 15 percent slopes	60,320	1.1
19	Erda silt loam, 1 to 5 percent slopes	24,975	0.5
20	Flygare-Dateman-Rock outcrop association, 30 to 70 percent slopes	8,638	0.2
21	Hiko Peak gravelly loam, 2 to 15 percent slopes	106,878	2.0
22	Hiko Peak very stony loam, 2 to 8 percent slopes	26,682	0.5
23	Hiko Peak-Checkett complex, 2 to 40 percent slopes	6,278	0.1
24	Hiko Peak-Taylorsflat complex, 1 to 15 percent slopes	53,098	1.0
25	Hiko Springs gravelly sandy loam, 2 to 4 percent slopes	21,270	0.4
26	Holmes very stony sandy loam, 5 to 15 percent slopes	6,786	0.1
27	Izamatch-Cliffdown, alkali, complex, 2 to 8 percent slopes	95,577	1.8
28	Izamatch, alkali-Cliffdown complex, 2 to 15 percent slopes	18,662	0.4
29	Jericho gravelly sandy loam, dry, 2 to 8 percent slopes	18,623	0.4
30	Junkett gravelly loam, 2 to 5 percent slopes	6,285	0.1
31	Kanosh loam, 0 to 2 percent slopes	3,564	*
32	Kanosh-Saltair-Logan complex, 0 to 2 percent slopes	40,914	0.8
33	Kapod gravelly loam, 2 to 10 percent slopes	2,333	*
34	Kapod stony loam, 5 to 30 percent slopes	5,681	0.1
35	Kapod very cobbly loam, 5 to 30 percent slopes	44,202	0.8
36	Kilburn gravelly sandy loam, 2 to 10 percent slopes	9,403	0.2
37	Lakewin gravelly loam, 1 to 5 percent slopes	9,988	0.2
38	Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes	143,366	2.7
39	Logan silt loam, 0 to 1 percent slopes	7,241	0.1
40	Lundy-Dateman-Rock outcrop association, 30 to 70 percent slopes	23,896	0.5
41	Manassa silt loam, 0 to 3 percent slopes	15,339	0.3
42	Medburn fine sandy loam, 2 to 8 percent slopes	30,713	0.6
43	Medburn fine sandy loam, saline, 2 to 4 percent slopes	24,429	0.5
44	Pits	2,066	*
45	Playas	1,008,872	19.1
46	Playas-Saltair complex, 0 to 1 percent slopes	456,647	8.6
46A	Podmor, moist-Dateman-Rock outcrop association, 30 to 70 percent slopes	33,805	0.6
47	Podmor-Onaqui-Rock outcrop association, 20 to 60 percent slopes	58,408	1.1
48	Reywat-Broad-Rock outcrop association, 30 to 60 percent slopes	106,197	2.0
49	Ridd-Rock outcrop complex, 30 to 70 percent slopes	4,042	*
50	Ridd-Wasatch-Rock outcrop association, 6 to 30 percent slopes	13,247	0.3
51	Rock outcrop-Lundy complex, 30 to 60 percent slopes	10,530	0.2
52	Salt flats	127,436	2.4
53	Saltair-Playas complex, 0 to 1 percent slopes	153,985	2.9
54	Scalade very fine sandy loam, moist, 2 to 5 percent slopes	12,600	0.2
55	Scalade-Jericho-Medburn association, 2 to 15 percent slopes	34,185	0.6
56	Skumpah silt loam, 0 to 2 percent slopes	196,942	3.7
57	Skumpah silt loam, wet substratum, 0 to 1 percent slopes	7,910	0.2
58	Skumpah silt loam, wet substratum, saline, 0 to 1 percent slopes	23,933	0.5
59	Skumpah silt loam, saline, 0 to 2 percent slopes	90,267	1.7
60	Skumpah-Yenrab complex, saline, 0 to 15 percent slopes	58,741	1.1
61	Slickens and mine dumps	1,568	*
62	Spager gravelly loam, 2 to 15 percent slopes	26,366	0.5
63	Springmeyer gravelly sandy loam, 3 to 7 percent slopes	4,443	*

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
64	Taylorsflat loam, 1 to 5 percent slopes	48,555	0.9
65	Taylorsflat loam, saline, 0 to 3 percent slopes	35,984	0.7
65A	Theriot-Rock outcrop complex, 15 to 70 percent slopes	6,141	0.1
66	Timpie silt loam, 0 to 3 percent slopes	97,132	1.8
67	Timpie silt loam, saline, 0 to 4 percent slopes	58,408	1.1
68	Timpie-Tooele complex, saline, 0 to 5 percent slopes	20,825	0.4
69	Tooele fine sandy loam, 0 to 5 percent slopes	217,704	4.1
70	Tooele fine sandy loam, saline, 0 to 5 percent slopes	31,859	0.6
71	Yeates Hollow cobbly loam, 6 to 20 percent slopes	6,468	0.1
72	Yeates Hollow very cobbly loam, 6 to 40 percent slopes	4,167	*
73	Yenrab fine sand, 2 to 15 percent slopes	26,549	0.5
74	Yenrab-Badlands complex, 2 to 15 percent slopes	15,960	0.3
75	Yenrab-Tooele complex, saline, 0 to 15 percent slopes	59,722	1.1
	Water	528,713	10.0
	Total	5,309,854	100.0

* Less than 0.1 percent.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields in the "N" columns are for nonirrigated soils; those in the "I" column are for irrigated soils. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Land capability		Alfalfa hay		Barley		Pasture		Winter wheat	
	N	I	N	I	N	I	N	I	N	I
			Tons		Bu		AUM*		Bu	
1----------------- Abela	VIs	IIIe	2.0	5.0	---	80	---	7.0	22	---
2----------------- Abela	VIs	---	2.0	5.0	---	80	---	7.0	22	---
3, 4--------------			---	---	---	---	---	---	---	---
Amtoft-----------	VIIe	---								
Rock outcrop-----	VIIIs	---								
5-----------------			---	---	---	---	---	---	---	---
Berent-----------	VIIs	---								
Hiko Peak--------	VIs	IVe								
6----------------- Birdow	VIs	IIe	---	7.0	---	100	---	7.0	---	---
7----------------- Borvant	VIIs	---	---	---	---	---	---	---	---	---
8----------------- Bramwell	VIIw	IVw	---	---	---	90	4.0	8.0	---	---
10----------------			---	---	---	---	---	---	---	---
Broad------------	VIIe	---								
Reywat-----------	VIIe	---								
Rock outcrop-----	VIIIs	---								
11----------------			---	---	---	---	---	---	---	---
Checkett---------	VIIs	---								
Rock outcrop-----	VIIIs	---								
12---------------- Cliffdown	VIIs	IVe	---	5.0	---	80	---	7.0	---	---
13---------------- Cristo	VIIe	---	---	---	---	---	---	---	---	---
14, 14A-----------			---	---	---	---	---	---	---	---
Dateman----------	VIIe	---								
Podmor-----------	VIIe	---								
Rock outcrop-----	VIIIs	---								
15---------------- Doyce	IVs	IIIe	2.0	6.0	---	100	---	7.0	15	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Barley		Pasture		Winter wheat	
	N	I	N	I	N	I	N	I	N	I
			Tons		Bu		AUM*		Bu	
16---------------- Dune land	VIIIe	---	---	---	---	---	---	---	---	---
17---------------- Dynal	VIIs	---	---	---	---	---	---	---	---	---
18----------------			---	---	---	---	---	---	---	---
Dynal------------	VIIs	---								
Tooele-----------	VIIs	IVs								
19---------------- Erda	IVs	IIe	2.0	7.0	---	100	---	7.0	22	---
20----------------			---	---	---	---	---	---	---	---
Flygare----------	VIIe	---								
Dateman----------	VIIe	---								
Rock outcrop-----	VIIIs	---								
21---------------- Hiko Peak	VIs	IVe	---	5.0	---	80	---	7.0	---	---
22---------------- Hiko Peak	VIIs	---	---	---	---	---	---	---	---	---
23----------------			---	5.0	---	80	---	7.0	---	---
Hiko Peak--------	VIs	IVe								
Checkett---------	VIIs	---								
24----------------			---	5.0	---	80	---	7.0	---	---
Hiko Peak--------	VIs	IVe								
Taylorsflat------	VIs	IIIs								
25---------------- Hiko Springs	VIIs	---	---	---	---	---	---	---	---	---
26---------------- Holmes	VIs	---	---	---	---	---	---	---	---	---
27----------------			---	---	---	---	---	---	---	---
Izamatch---------	VIIs	---								
Cliffdown--------	VIIs	---								
28----------------			---	---	---	---	---	---	---	---
Izamatch---------	VIIs	---								
Cliffdown--------	VIIs	IVe								
29---------------- Jericho	VIIs	---	---	---	---	---	---	---	---	---
30---------------- Junkett	VIIs	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay N	Alfalfa hay I	Barley N	Barley I	Pasture N	Pasture I	Winter wheat N	Winter wheat I
			Tons	Tons	Bu	Bu	AUM*	AUM*	Bu	Bu
31 Kanosh	VIIw	IIIw	---	6.0	---	80	---	6.0	---	---
32:			---	6.0	---	80	---	6.0	---	---
Kanosh	VIIw	IIIw								
Saltair	VIIIs	---								
Logan	VIIw	---								
33 Kapod	IVs	IIIe	2.0	6.0	---	90	---	7.0	25	---
34, 35 Kapod	VIs	---	---	---	---	---	---	---	---	---
36 Kilburn	VIs	---	---	---	---	---	---	---	---	---
37 Lakewin	VIs	IVs	2.0	6.0	---	90	---	7.0	25	---
38:			---	---	---	---	---	---	---	---
Lodar	VIIe	---								
Lundy	VIIe	---								
Rock outcrop	VIIIs	---								
39 Logan	VIIw	---	---	---	---	---	---	---	---	---
40:			---	---	---	---	---	---	---	---
Lundy	VIIe	---								
Dateman	VIIe	---								
Rock outcrop	VIIIs	---								
41 Manassa	VIs	IIIe	---	7.0	---	90	---	7.0	---	---
42 Medburn	VIIs	IIIe	---	6.0	---	90	---	7.0	---	---
43 Medburn	VIIs	IVs	---	6.0	---	90	---	7.0	---	---
44 Pits	VIIIs	---	---	---	---	---	---	---	---	---
45 Playas	VIIIw	---	---	---	---	---	---	---	---	---
46:			---	---	---	---	---	---	---	---
Playas	VIIIw	---								
Saltair	VIIIs	---								

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Barley		Pasture		Winter wheat	
	N	I	N	I	N	I	N	I	N	I
			Tons		Bu		AUM*		Bu	
46A			---	---	---	---	---	---	---	---
Podmor	VIIe	---								
Dateman	VIIe	---								
Rock outcrop	VIIIs	---								
47			---	---	---	---	---	---	---	---
Podmor	VIIe	---								
Onaqui	VIIe	---								
Rock outcrop	VIIIs	---								
48			---	---	---	---	---	---	---	---
Reywat	VIIe	---								
Broad	VIIe	---								
Rock outcrop	VIIIs	---								
49			---	---	---	---	---	---	---	---
Ridd	VIIe	---								
Rock outcrop	VIIIs	---								
50			---	---	---	---	---	---	---	---
Ridd	VIIs	---								
Wasatch	VIs	---								
Rock outcrop	VIIIs	---								
51			---	---	---	---	---	---	---	---
Rock outcrop	VIIIs	---								
Lundy	VIIe	---								
52 Salt flats	VIIIw	---	---	---	---	---	---	---	---	---
53			---	---	---	---	---	---	---	---
Saltair	VIIIs	---								
Playas	VIIIw	---								
54 Scalade	VIIs	---	---	---	---	---	---	---	---	---
55			---	---	---	---	---	---	---	---
Scalade	VIIs	---								
Jericho	VIIs	---								
Medburn	VIIs	IIIe								
56 Skumpah	VIIs	IVs	---	3.5	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay N	Alfalfa hay I	Barley N	Barley I	Pasture N	Pasture I	Winter wheat N	Winter wheat I
			Tons		Bu		AUM*		Bu	
57, 58, 59: Skumpah	VIIs	---	---	---	---	---	---	---	---	---
60:			---	---	---	---	---	---	---	---
Skumpah	VIIs	---								
Yenrab	VIIs	---								
61: Slickens and mine dumps	VIIIs	---	---	---	---	---	---	---	---	---
62: Spager	VIIs	---	---	---	---	---	---	---	---	---
63: Springmeyer	VIs	---	---	---	---	---	---	---	---	---
64: Taylorsflat	VIs	IIIs	---	6.0	---	80	---	7.0	---	---
65: Taylorsflat	VIs	IVs	---	6.0	---	80	---	7.0	---	---
65A:			---	---	---	---	---	---	---	---
Theriot	VIIs	---								
Rock outcrop	VIIIs	---								
66, 67: Timpie	VIIs	IVs	---	6.0	---	80	---	7.0	---	---
68:			---	---	---	---	---	---	---	---
Timpie	VIIs	IVs								
Tooele	VIIs	IVs								
69, 70: Tooele	VIIs	IVs	---	6.0	---	80	---	7.0	---	---
71: Yeates Hollow	IVe	---	---	---	---	---	---	---	---	---
72: Yeates Hollow	VIe	---	---	---	---	---	---	---	---	---
73: Yenrab	VIIs	---	---	---	---	---	---	---	---	---
74:			---	---	---	---	---	---	---	---
Yenrab	VIIs	---								
Badlands	VIIIs	---								
75:			---	---	---	---	---	---	---	---
Yenrab	VIIs	---								
Tooele	VIIs	IVs								

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

Map symbol and soil name	Range site or woodland site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
1: Abela	Upland Gravelly Loam (Mountain Big Sagebrush)	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Mountain big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Other perennial forbs	5
				Needleandthread	5
				Other perennial grasses	5
				Phlox	5
				Other shrubs	5
2: Abela	Upland Stony Loam (Pinyon-Utah Juniper)	Favorable	750	Bluebunch wheatgrass	15
		Normal	550	Mountain big sagebrush	15
		Unfavorable	350	Birchleaf mountainmahogany	10
				Indian ricegrass	10
				Black sagebrush	10
				Bluegrass	10
				Antelope bitterbrush	10
				Other perennial grasses	5
				Other perennial forbs	5
				Needleandthread	5
				Other shrubs	5
3: Amtoft	Semidesert Shallow Loam (Utah Juniper-Salina Wildrye)	Favorable	350	Saline wildrye	30
		Normal	250	Black sagebrush	25
		Unfavorable	175	Indian ricegrass	10
				Shadscale	10
				Nevada bluegrass	5
				Other shrubs	5
				Other perennial forbs	5
				Other perennial grasses	5
				Globemallow	5
Rock outcrop.					
4: Amtoft	Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass)	Favorable	350	Black sagebrush	30
		Normal	250	Bluebunch wheatgrass	25
		Unfavorable	175	Indian ricegrass	10
				Other perennial grasses	10
				Nevada bluegrass	5
				Other shrubs	5
				Other perennial forbs	5
				Shadscale	5
				Globemallow	5
Rock outcrop.					
5: Berent	Semidesert Sand (Utah Juniper)	Favorable	920	Needleandthread	20
		Normal	750	Indian ricegrass	15
		Unfavorable	570	Fourwing saltbush	10
				Other perennial forbs	10
				Basin big sagebrush	5
				Bud sagebrush	5
				Other perennial grasses	5
				Spiny hopsage	5
				Lemon scurfpea	5
				Skunkbush sumac	5
				Scarlet globemallow	5
				Sand dropseed	5
				Other shrubs	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
5:					
Hiko Peak--------	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North	Favorable	1,000	Wyoming big sagebrush-----------	25
		Normal	800	Bluebunch wheatgrass------------	20
		Unfavorable	500	Indian ricegrass----------------	10
				Douglas rabbitbrush-------------	5
				Rose pussytoes------------------	5
				Hood phlox----------------------	5
				Shadscale-----------------------	5
				Nevada bluegrass----------------	5
				Other shrubs--------------------	5
				Other perennial forbs-----------	5
				Other perennial grasses---------	5
				Bottlebrush squirreltail--------	5
6----------------- Birdow	Loamy Bottom (Basin Wildrye)	Favorable	2,500	Basin wildrye-------------------	50
		Normal	1,500	Basin big sagebrush-------------	10
		Unfavorable	1,000	Other perennial grasses---------	10
				Rubber rabbitbrush--------------	5
				Western wheatgrass--------------	5
				Other shrubs--------------------	5
				Nevada bluegrass----------------	5
				Other perennial forbs-----------	5
				Tapertip hawksbeard-------------	5
7----------------- Borvant	Upland Shallow Hardpan (Pinyon-Utah Juniper)	Favorable	850	Black sagebrush-----------------	20
		Normal	700	Bluebunch wheatgrass------------	15
		Unfavorable	400	Wyoming big sagebrush-----------	10
				Antelope bitterbrush------------	10
				Indian ricegrass----------------	10
				Phlox---------------------------	5
				Needleandthread-----------------	5
				Bluegrass-----------------------	5
				Other perennial forbs-----------	5
				Other perennial grasses---------	5
				Mexican cliffrose---------------	5
				Other shrubs--------------------	5
8----------------- Bramwell	Alkali Bottom (Alkali Sacaton)	Favorable	2,500	Alkali sacaton------------------	20
		Normal	1,700	Coastal saltgrass---------------	20
		Unfavorable	1,000	Alkali bluegrass----------------	15
				Basin wildrye-------------------	10
				Black greasewood----------------	5
				Douglas sedge-------------------	5
10:					
Broad------------	Mountain Gravelly Loam (Oak)	Favorable	2,300	Gambel oak----------------------	30
		Normal	1,900	Bearded wheatgrass--------------	15
		Unfavorable	1,500	Bigtooth maple------------------	5
				Bluebunch wheatgrass------------	5
				Mountain big sagebrush----------	5
				Aster---------------------------	5
				Mountain brome------------------	5
				Birchleaf mountainmahogany------	5
				Nevada bluegrass----------------	5
				Mountain snowberry--------------	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
10:					
Reywat----------	Upland Shallow Loam (Black Sagebrush)	Favorable	800	Black sagebrush----------------	30
		Normal	600	Bluebunch wheatgrass-----------	25
		Unfavorable	300	Bluegrass----------------------	10
				Other shrubs-------------------	10
				Needleandthread----------------	5
				Douglas rabbitbrush------------	5
				Hood phlox---------------------	5
				Other perennial forbs----------	5
				Other perennial grasses--------	5
11:					
Checkett---------	Semidesert Shallow Loam (Black Sagebrush)	Favorable	700	Black sagebrush----------------	25
		Normal	550	Bluebunch wheatgrass-----------	20
		Unfavorable	400	Indian ricegrass---------------	10
				Horsebrush---------------------	10
				Shadscale----------------------	5
				Nevada bluegrass---------------	5
				Douglas rabbitbrush------------	5
				Other perennial forbs----------	5
				Bottlebrush squirreltail-------	5
				Other shrubs-------------------	5
				Needleandthread----------------	5
Rock outcrop.					
12--------------- Cliffdown	Desert Gravelly Loam (Shadscale)	Favorable	500	Shadscale----------------------	20
		Normal	400	Galleta------------------------	20
		Unfavorable	300	Bud sagebrush------------------	10
				Indian ricegrass---------------	10
				Winterfat----------------------	5
				Douglas rabbitbrush------------	5
				Mormon tea---------------------	5
				Other perennial forbs----------	5
				Horsebrush---------------------	5
				Other perennial grasses--------	5
				Bottlebrush squirreltail-------	5
				Other shrubs-------------------	5
13--------------- Cristo	Mountain Gravelly Loam (Mountain Big Sagebrush)	Favorable	2,000	Bluebunch wheatgrass-----------	20
		Normal	1,325	Birchleaf mountainmahogany-----	15
		Unfavorable	800	Mountain big sagebrush---------	10
				Bluegrass----------------------	10
				Phlox--------------------------	5
				Western wheatgrass-------------	5
				Other perennial forbs----------	5
				Saskatoon serviceberry---------	5
				Other perennial grasses--------	5
				Mountain snowberry-------------	5
				Antelope bitterbrush-----------	5
				Gambel oak---------------------	5
				Needlegrass--------------------	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
14:					
Dateman----------	High Mountain Stony Loam (Conifer)	Favorable	320	Mountain brome------------------	10
		Normal	160	Sedge---------------------------	10
		Unfavorable	80	Oregongrape---------------------	10
				Mountain snowberry--------------	10
				Other perennial grasses---------	10
				Currant-------------------------	10
				Bluegrass-----------------------	5
				Violet--------------------------	5
				Other perennial forbs-----------	5
				Mountain big sagebrush----------	5
				Sheep fescue--------------------	5
				Other shrubs--------------------	5
				Slender wheatgrass--------------	5
				Fendler meadowrue---------------	5
Podmor-----------	Mountain Stony Loam (Antelope Bitterbrush)	Favorable	1,750	Bluebunch wheatgrass------------	25
		Normal	1,500	Other perennial grasses---------	20
		Unfavorable	850	Bulbous oniongrass--------------	10
				Antelope bitterbrush------------	10
				Other shrubs--------------------	10
				Arrowleaf balsamroot------------	5
				Idaho fescue--------------------	5
				Other perennial forbs-----------	5
				Mountain big sagebrush----------	5
				Prairie junegrass---------------	5
Rock outcrop.					
14A:					
Dateman----------	High Mountain Stony Loam (Conifer)	Favorable	320	Mountain brome------------------	10
		Normal	160	Sedge---------------------------	10
		Unfavorable	80	Oregongrape---------------------	10
				Mountain snowberry--------------	10
				Other perennial grasses---------	10
				Currant-------------------------	10
				Bluegrass-----------------------	5
				Violet--------------------------	5
				Other perennial forbs-----------	5
				Mountain big sagebrush----------	5
				Sheep fescue--------------------	5
				Other shrubs--------------------	5
				Slender wheatgrass--------------	5
				Fendler meadowrue---------------	5
Podmor-----------	Mountain Gravelly Loam (Oak)	Favorable	2,300	Gambel oak----------------------	30
		Normal	1,900	Bearded wheatgrass--------------	15
		Unfavorable	1,500	Other shrubs--------------------	10
				Other perennial grasses---------	10
				Mountain snowberry--------------	5
				Mountain big sagebrush----------	5
				Bluebunch wheatgrass------------	5
				Other perennial forbs-----------	5
Rock outcrop.					

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
15: Doyce	Upland Loam (Basin Big Sagebrush)	Favorable	1,400	Bluebunch wheatgrass	25
		Normal	1,200	Mountain big sagebrush	15
		Unfavorable	700	Bluegrass	10
				Indian ricegrass	10
				Douglas rabbitbrush	5
				Western wheatgrass	5
				Arrowleaf balsamroot	5
				Other perennial forbs	5
				Other shrubs	5
				Other perennial grasses	5
				Antelope bitterbrush	5
				Bottlebrush squirreltail	5
17: Dynal	Desert Oolitic Dunes (Black Greasewood)	Favorable	500	Black greasewood	30
		Normal	400	Fourwing saltbush	20
		Unfavorable	200	Torrey seepweed	20
				Shadscale	10
				Other annual forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
				Other shrubs	5
18: Dynal	Desert Oolitic Dunes (Black Greasewood)	Favorable	500	Black greasewood	30
		Normal	400	Fourwing saltbush	20
		Unfavorable	200	Torrey seepweed	20
				Shadscale	10
				Other annual forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
				Other shrubs	5
Tooele	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood	50
		Normal	700	Bottlebrush squirreltail	15
		Unfavorable	300	Other perennial grasses	5
				Shadscale	5
				Other annual forbs	5
				Seepweed	5
				Trident saltbush	5
				Alkali sacaton	5
				Other shrubs	5
19: Erda	Upland Loam (Basin Big Sagebrush)	Favorable	1,400	Bluebunch wheatgrass	25
		Normal	1,200	Mountain big sagebrush	15
		Unfavorable	700	Bluegrass	10
				Indian ricegrass	10
				Douglas rabbitbrush	5
				Western wheatgrass	5
				Arrowleaf balsamroot	5
				Other perennial forbs	5
				Other shrubs	5
				Other perennial grasses	5
				Antelope bitterbrush	5
				Bottlebrush squirreltail	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
20:					
Flygare	High Mountain Loam (Aspen)	Favorable	3,250	Mountain brome	10
		Normal	2,275	Blue wildrye	10
		Unfavorable	1,300	Other perennial grasses	10
				Mountain snowberry	10
				Other shrubs	10
				Nodding bluegrass	5
				Bearded wheatgrass	5
				Other perennial forbs	5
				Edible valerian	5
				Oregongrape	5
				Common chokecherry	5
				Butterweed	5
				Aspen peavine	5
				Sweetanise	5
				Fendler meadowrue	5
Dateman	High Mountain Stony Loam (Conifer)	Favorable	320	Mountain brome	10
		Normal	160	Sedge	10
		Unfavorable	80	Oregongrape	10
				Mountain snowberry	10
				Other perennial grasses	10
				Currant	10
				Bluegrass	5
				Violet	5
				Other perennial forbs	5
				Mountain big sagebrush	5
				Sheep fescue	5
				Other shrubs	5
				Slender wheatgrass	5
				Fendler meadowrue	5
Rock outcrop.					
21: Hiko Peak	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	20
		Unfavorable	500	Indian ricegrass	10
				Douglas rabbitbrush	5
				Rose pussytoes	5
				Hood phlox	5
				Shadscale	5
				Nevada bluegrass	5
				Other shrubs	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
22: Hiko Peak	Semidesert Stony Loam (Black Sagebrush)	Favorable	700	Black sagebrush	30
		Normal	600	Indian ricegrass	15
		Unfavorable	400	Shadscale	10
				Bluebunch wheatgrass	10
				Other shrubs	10
				Douglas rabbitbrush	5
				Winterfat	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
23:					
Hiko Peak	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	20
		Unfavorable	500	Indian ricegrass	10
				Douglas rabbitbrush	5
				Rose pussytoes	5
				Hood phlox	5
				Shadscale	5
				Nevada bluegrass	5
				Other shrubs	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
Checkett	Semidesert Shallow Loam (Black Sagebrush)	Favorable	700	Black sagebrush	25
		Normal	550	Bluebunch wheatgrass	20
		Unfavorable	400	Indian ricegrass	10
				Horsebrush	10
				Shadscale	5
				Nevada bluegrass	5
				Douglas rabbitbrush	5
				Other perennial forbs	5
				Bottlebrush squirreltail	5
				Other shrubs	5
				Needleandthread	5
24:					
Hiko Peak	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	20
		Unfavorable	500	Indian ricegrass	10
				Douglas rabbitbrush	5
				Rose pussytoes	5
				Hood phlox	5
				Shadscale	5
				Nevada bluegrass	5
				Other shrubs	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
Taylorsflat	Semidesert Loam (Wyoming Big Sagebrush)	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Indian ricegrass	10
				Other shrubs	10
				Bottlebrush squirreltail	10
				Needleandthread	5
				Hood phlox	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
				Penstemon	5
25: Hiko Springs	Desert Sandy Loam (Shadscale)	Favorable	600	Indian ricegrass	30
		Normal	450	Shadscale	15
		Unfavorable	200	Winterfat	15
				Galleta	5
				Douglas rabbitbrush	5
				Bud sagebrush	5
				Needleandthread	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
				Other shrubs	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
26: Holmes	Upland Gravelly Loam (Mountain Big Sagebrush)	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Mountain big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Other perennial forbs	5
				Needleandthread	5
				Other perennial grasses	5
				Phlox	5
				Other shrubs	5
27:					
Izamatch	Desert Gravelly Sandy Loam (Indian Ricegrass)	Favorable	600	Indian ricegrass	25
		Normal	500	Shadscale	15
		Unfavorable	400	Winterfat	10
				Galleta	10
				Horsebrush	10
				Bottlebrush squirreltail	5
				Needleandthread	5
				Bud sagebrush	5
Cliffdown	Desert Alkali Bench (Bud Sagebrush)	Favorable	350	Bud sagebrush	40
		Normal	250	Galleta	15
		Unfavorable	150	Shadscale	10
				Mormon tea	5
				Green molly kochia	5
				Other shrubs	5
				Indian ricegrass	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
28:					
Izamatch	Desert Alkali Bench (Bud Sagebrush)	Favorable	350	Bud sagebrush	40
		Normal	250	Bottlebrush squirreltail	15
		Unfavorable	150	Shadscale	10
				Galleta	5
				Mormon tea	5
				Green molly kochia	5
				Indian ricegrass	5
Cliffdown	Desert Gravelly Loam (Shadscale)	Favorable	500	Shadscale	20
		Normal	400	Galleta	20
		Unfavorable	300	Bud sagebrush	10
				Indian ricegrass	10
				Winterfat	5
				Douglas rabbitbrush	5
				Mormon tea	5
				Other perennial forbs	5
				Horsebrush	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
				Other shrubs	5
29: Jericho	Semidesert Shallow Hardpan (8-10 Ppt)	Favorable	600	Black sagebrush	30
		Normal	400	Indian ricegrass	20
		Unfavorable	250	Needleandthread	10
				Other perennial grasses	10
				Phlox	5
				Winterfat	5
				Other perennial forbs	5
				Douglas rabbitbrush	5
				Bottlebrush squirreltail	5
				Other shrubs	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
			Lb/acre		Pct
30---------------- Junkett	Semidesert Loam (Wyoming Big Sagebrush)	Favorable	900	Bluebunch wheatgrass------------	25
		Normal	700	Wyoming big sagebrush-----------	20
		Unfavorable	500	Indian ricegrass----------------	10
				Other shrubs--------------------	10
				Bottlebrush squirreltail--------	10
				Needleandthread-----------------	5
				Hood phlox----------------------	5
				Douglas rabbitbrush-------------	5
				Scarlet globemallow-------------	5
				Penstemon-----------------------	5
31---------------- Kanosh	Alkali Bottom (Alkali Sacaton)	Favorable	2,500	Alkali sacaton------------------	20
		Normal	1,750	Inland saltgrass----------------	20
		Unfavorable	1,000	Alkali bluegrass----------------	15
				Basin wildrye-------------------	10
				Sedge---------------------------	5
				Rush----------------------------	5
				Other perennial forbs-----------	5
				Other shrubs--------------------	5
				Other perennial grasses---------	5
				Black greasewood----------------	5
				Trident saltbush----------------	5
32: Kanosh-----------	Alkali Bottom (Alkali Sacaton)	Favorable	2,500	Alkali sacaton------------------	20
		Normal	1,750	Inland saltgrass----------------	20
		Unfavorable	1,000	Alkali bluegrass----------------	15
				Basin wildrye-------------------	10
				Sedge---------------------------	5
				Rush----------------------------	5
				Other perennial forbs-----------	5
				Other shrubs--------------------	5
				Other perennial grasses---------	5
				Black greasewood----------------	5
				Trident saltbush----------------	5
Saltair----------	Desert Salty Silt (Pickleweed)	Favorable	250	Pickleweed----------------------	50
		Normal	200	Inland saltgrass----------------	35
		Unfavorable	100	Europe swampfire----------------	5
				Seepweed------------------------	5
				Other shrubs--------------------	5
Logan------------	Wet Saline Meadow	Favorable	4,000	Alkali sacaton------------------	20
		Normal	3,000	Rush----------------------------	10
		Unfavorable	2,000	Sedge---------------------------	10
				Inland saltgrass----------------	10
				Europe swampfire----------------	10
				Bulrush-------------------------	10
				Western seepweed----------------	5
				Alkali bluegrass----------------	5
				Showy milkweed------------------	5
				Pickleweed----------------------	5
				Common reed---------------------	5
				Alkali cordgrass----------------	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
33, 34: Kapod	Upland Gravelly Loam (Mountain Big Sagebrush)	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Mountain big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Other perennial forbs	5
				Needleandthread	5
				Other perennial grasses	5
				Phlox	5
				Other shrubs	5
35: Kapod	Upland Stony Loam (Pinyon-Utah Juniper)	Favorable	750	Bluebunch wheatgrass	15
		Normal	550	Mountain big sagebrush	15
		Unfavorable	350	Birchleaf mountainmahogany	10
				Indian ricegrass	10
				Black sagebrush	10
				Bluegrass	10
				Antelope bitterbrush	10
				Other perennial grasses	5
				Other perennial forbs	5
				Needleandthread	5
				Other shrubs	5
36: Kilburn	Upland Gravelly Loam (Mountain Big Sagebrush)	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Mountain big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Other perennial forbs	5
				Needleandthread	5
				Other perennial grasses	5
				Phlox	5
				Other shrubs	5
37: Lakewin	Upland Gravelly Loam (Mountain Big Sagebrush)	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Mountain big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Other perennial forbs	5
				Needleandthread	5
				Other perennial grasses	5
				Phlox	5
				Other shrubs	5
38:					
Lodar	Upland Shallow Loam (Pinyon-Utah Juniper)	Favorable	700	Bluebunch wheatgrass	20
		Normal	500	Black sagebrush	15
		Unfavorable	200	Indian ricegrass	10
				Bluegrass	10
				Birchleaf mountainmahogany	5
				Mexican cliffrose	5
				Mountain big sagebrush	5
				Blue grama	5
				Other perennial forbs	5
				Needleandthread	5
				Other perennial grasses	5
				Antelope bitterbrush	5
				Other shrubs	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
38:					
Lundy	Mountain Shallow Loam (Low Sagebrush)	Favorable	1,300	Bluebunch wheatgrass	30
		Normal	1,100	Black sagebrush	15
		Unfavorable	600	Other shrubs	10
				Antelope bitterbrush	10
				Bluegrass	10
				Arrowleaf balsamroot	5
				Low sagebrush	5
				Other perennial forbs	5
				Other perennial grasses	5
				Indian ricegrass	5
Rock outcrop.					
39 Logan	Wet Saline Meadow	Favorable	4,000	Alkali sacaton	20
		Normal	3,000	Rush	10
		Unfavorable	2,000	Sedge	10
				Inland saltgrass	10
				Europe swampfire	10
				Bulrush	10
				Western seepweed	5
				Alkali bluegrass	5
				Showy milkweed	5
				Pickleweed	5
				Common reed	5
				Alkali cordgrass	5
40:					
Lundy	Mountain Shallow Loam (Low Sagebrush)	Favorable	1,300	Bluebunch wheatgrass	30
		Normal	1,100	Black sagebrush	15
		Unfavorable	600	Other shrubs	10
				Antelope bitterbrush	10
				Bluegrass	10
				Arrowleaf balsamroot	5
				Low sagebrush	5
				Other perennial forbs	5
				Other perennial grasses	5
				Indian ricegrass	5
Dateman	High Mountain Stony Loam (Conifer)	Favorable	320	Mountain brome	10
		Normal	160	Sedge	10
		Unfavorable	80	Oregongrape	10
				Mountain snowberry	10
				Other perennial grasses	10
				Currant	10
				Bluegrass	5
				Violet	5
				Other perennial forbs	5
				Mountain big sagebrush	5
				Sheep fescue	5
				Other shrubs	5
				Slender wheatgrass	5
				Fendler meadowrue	5
Rock outcrop.					

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
41: Manassa	Semidesert Alkali Loam (Black Greasewood)	Favorable	750	Wyoming big sagebrush	20
		Normal	600	Black greasewood	20
		Unfavorable	300	Bottlebrush squirreltail	15
				Indian ricegrass	5
				Milkvetch	5
				Nevada bluegrass	5
				Other shrubs	5
				Other perennial forbs	5
				Other perennial grasses	5
				Shadscale	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
42: Medburn	Semidesert Loam (Wyoming Big Sagebrush)	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Indian ricegrass	10
				Other shrubs	10
				Bottlebrush squirreltail	10
				Needleandthread	5
				Hood phlox	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
				Penstemon	5
43: Medburn	Semidesert Alkali Loam (Black Greasewood)	Favorable	750	Wyoming big sagebrush	20
		Normal	600	Black greasewood	20
		Unfavorable	300	Bottlebrush squirreltail	15
				Indian ricegrass	5
				Milkvetch	5
				Nevada bluegrass	5
				Other shrubs	5
				Other perennial forbs	5
				Other perennial grasses	5
				Shadscale	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
46: Playas.					
Saltair	Desert Salty Silt (Pickleweed)	Favorable	250	Pickleweed	50
		Normal	200	Seepweed	5
		Unfavorable	100	Other shrubs	5
				Europe swampfire	5
				Inland saltgrass	35
46A: Podmor	Mountain Gravelly Loam (Oak)	Favorable	2,300	Gambel oak	30
		Normal	1,900	Bearded wheatgrass	15
		Unfavorable	1,500	Other shrubs	10
				Other perennial grasses	10
				Mountain snowberry	5
				Mountain big sagebrush	5
				Bluebunch wheatgrass	5
				Other perennial forbs	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
46A:					
Dateman	High Mountain Stony Loam (Conifer)	Favorable	320	Mountain brome	10
		Normal	160	Sedge	10
		Unfavorable	80	Oregongrape	10
				Mountain snowberry	10
				Other perennial grasses	10
				Currant	10
				Bluegrass	5
				Violet	5
				Other perennial forbs	5
				Mountain big sagebrush	5
				Sheep fescue	5
				Other shrubs	5
				Slender wheatgrass	5
				Fendler meadowrue	5
Rock outcrop.					
47:					
Podmor	Mountain Stony Loam (Antelope Bitterbrush)	Favorable	1,750	Bluebunch wheatgrass	25
		Normal	1,500	Other perennial grasses	20
		Unfavorable	850	Bulbous oniongrass	10
				Antelope bitterbrush	10
				Other shrubs	10
				Arrowleaf balsamroot	5
				Idaho fescue	5
				Other perennial forbs	5
				Mountain big sagebrush	5
				Prairie junegrass	5
Onaqui	Mountain Windswept Ridge	Favorable	350	Low sagebrush	20
		Normal	250	Bluebunch wheatgrass	15
		Unfavorable	150	Idaho fescue	10
				Other perennial grasses	10
				Other shrubs	10
				Other perennial forbs	10
				Stemless goldenweed	5
				Bluegrass	5
				Douglas rabbitbrush	5
				Hood phlox	5
				Wormleaf stonecrop	5
Rock outcrop.					
48:					
Reywat	Upland Shallow Loam (Pinyon-Utah Juniper)	Favorable	700	Bluebunch wheatgrass	20
		Normal	500	Black sagebrush	15
		Unfavorable	200	Bluegrass	10
				Indian ricegrass	10
				Birchleaf mountainmahogany	5
				Mountain big sagebrush	5
				Blue grama	5
				Other perennial forbs	5
				Needleandthread	5
				Other perennial grasses	5
				Antelope bitterbrush	5
				Other shrubs	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
48:					
Broad	Mountain Stony Loam (Antelope Bitterbrush)	Favorable	1,750	Bluebunch wheatgrass	25
		Normal	1,500	Antelope bitterbrush	10
		Unfavorable	850	Bulbous oniongrass	10
				Idaho fescue	5
				Arrowleaf balsamroot	5
				Prairie junegrass	5
				Mountain big sagebrush	5
Rock outcrop.					
49:					
Ridd	Upland Stony Loam (Wyoming Big Sagebrush)	Favorable	1,500	Bluebunch wheatgrass	20
		Normal	900	Wyoming big sagebrush	20
		Unfavorable	500	Other shrubs	10
				Other perennial grasses	10
				Douglas rabbitbrush	5
				Hood phlox	5
				Prairie junegrass	5
				Muttongrass	5
				Other perennial forbs	5
				Indian ricegrass	5
				Antelope bitterbrush	5
				Bottlebrush squirreltail	5
Rock outcrop.					
50:					
Ridd	Upland Stony Loam (Wyoming Big Sagebrush)	Favorable	1,500	Bluebunch wheatgrass	20
		Normal	900	Wyoming big sagebrush	20
		Unfavorable	500	Other shrubs	10
				Other perennial grasses	10
				Douglas rabbitbrush	5
				Hood phlox	5
				Prairie junegrass	5
				Muttongrass	5
				Other perennial forbs	5
				Indian ricegrass	5
				Antelope bitterbrush	5
				Bottlebrush squirreltail	5
Wasatch	Upland Sand (Indian Ricegrass)	Favorable	1,400	Indian ricegrass	20
		Normal	900	Needleandthread	15
		Unfavorable	700	Antelope bitterbrush	10
				Other perennial forbs	10
				Western wheatgrass	10
				Rubber rabbitbrush	5
				Basin big sagebrush	5
				Arrowleaf balsamroot	5
				Other perennial grasses	5
				Louisiana sagewort	5
				Sand dropseed	5
				Other shrubs	5
Rock outcrop.					
51:					
Rock outcrop.					

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
51:					
Lundy	Mountain Shallow Loam (Low Sagebrush)	Favorable	1,300	Bluebunch wheatgrass	30
		Normal	1,100	Other perennial grasses	5
		Unfavorable	600	Other perennial forbs	5
				Indian ricegrass	5
				Arrowleaf balsamroot	5
				Low sagebrush	5
				Other shrubs	10
				Antelope bitterbrush	10
				Bluegrass	10
				Black sagebrush	15
53:					
Saltair	Desert Salty Silt (Pickleweed)	Favorable	250	Pickleweed	50
		Normal	200	Inland saltgrass	35
		Unfavorable	100	Europe swampfire	5
				Seepweed	5
				Other shrubs	5
Playas.					
54	Semidesert Loam (Wyoming Big Sagebrush)	Favorable	900	Bluebunch wheatgrass	25
Scalade		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Other shrubs	10
				Indian ricegrass	10
				Bottlebrush squirreltail	10
				Penstemon	5
				Douglas rabbitbrush	5
				Hood phlox	5
				Needleandthread	5
				Scarlet globemallow	5
				Winterfat	0
				Other perennial grasses	0
				Other perennial forbs	0
				Phlox	0
				Black sagebrush	0
55:					
Scalade	Semidesert Shallow Hardpan (8-10 Ppt)	Favorable	600	Black sagebrush	30
		Normal	400	Indian ricegrass	20
		Unfavorable	250	Needleandthread	10
				Other perennial grasses	10
				Winterfat	5
				Douglas rabbitbrush	5
				Other perennial forbs	5
				Other shrubs	5
				Phlox	5
				Bottlebrush squirreltail	5
				Bluebunch wheatgrass	0
				Hood phlox	0
				Wyoming big sagebrush	0
				Scarlet globemallow	0
				Penstemon	0

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
55:					
Jericho	Semidesert Shallow Hardpan (Utah Juniper)	Favorable	600	Black sagebrush	20
		Normal	400	Bluebunch wheatgrass	15
		Unfavorable	300	Indian ricegrass	15
				Winterfat	10
				Other shrubs	10
				Douglas rabbitbrush	5
				Mormon tea	5
				Other perennial forbs	5
				Needleandthread	5
				Bottlebrush squirreltail	5
				Thickstem wildcabbage	5
Medburn	Semidesert Loam (Wyoming Big Sagebrush)	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Indian ricegrass	10
				Other shrubs	10
				Bottlebrush squirreltail	10
				Needleandthread	5
				Hood phlox	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
				Penstemon	5
56 Skumpah	Desert Flat (Shadscale)	Favorable	650	Shadscale	55
		Normal	450	Winterfat	10
		Unfavorable	350	Bottlebrush squirreltail	10
				Gray molly	5
				Other shrubs	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bud sagebrush	5
57 Skumpah	Alkali Bottom (Alkali Sacaton)	Favorable	2,500	Alkali sacaton	20
		Normal	1,750	Inland saltgrass	20
		Unfavorable	1,000	Alkali bluegrass	15
				Basin wildrye	10
				Sedge	5
				Rush	5
				Other perennial forbs	5
				Other shrubs	5
				Other perennial grasses	5
				Black greasewood	5
				Trident saltbush	5
58 Skumpah	Desert Salt Flat (Sickle Saltbush)	Favorable	400	Sickle saltbush	55
		Normal	300	Gray molly	15
		Unfavorable	100	Other shrubs	10
				Other perennial grasses	5
				Seepweed	5
				Bottlebrush squirreltail	5
				Other perennial forbs	5
59 Skumpah	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood	50
		Normal	700	Bottlebrush squirreltail	15
		Unfavorable	350	Other perennial grasses	5
				Shadscale	5
				Other annual forbs	5
				Seepweed	5
				Trident saltbush	5
				Alkali sacaton	5
				Other shrubs	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production		Characteristic vegetation	Compo- sition
		Kind of year	Dry weight		
			Lb/acre		Pct
60:					
Skumpah	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood	50
		Normal	700	Bottlebrush squirreltail	15
		Unfavorable	350	Other perennial grasses	5
				Shadscale	5
				Other annual forbs	5
				Seepweed	5
				Trident saltbush	5
				Alkali sacaton	5
				Other shrubs	5
Yenrab	Desert Alkali Sand (Fourwing Saltbush)	Favorable	700	Indian ricegrass	30
		Normal	500	Fourwing saltbush	15
		Unfavorable	350	Douglas rabbitbrush	10
				Other shrubs	10
				Alkali sacaton	10
				Black greasewood	10
				Other perennial grasses	5
				Bottlebrush squirreltail	5
				Other perennial forbs	5
62 Spager	Semidesert Shallow Hardpan (8-10 Ppt)	Favorable	600	Black sagebrush	30
		Normal	400	Indian ricegrass	20
		Unfavorable	250	Needleandthread	10
				Other perennial grasses	10
				Phlox	5
				Winterfat	5
				Other perennial forbs	5
				Douglas rabbitbrush	5
				Bottlebrush squirreltail	5
				Other shrubs	5
63 Springmeyer	Upland Gravelly Loam (Mountain Big Sagebrush)	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Mountain big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Other perennial forbs	5
				Needleandthread	5
				Other perennial grasses	5
				Phlox	5
				Other shrubs	5
64 Taylorsflat	Semidesert Loam (Wyoming Big Sagebrush)	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Indian ricegrass	10
				Other shrubs	10
				Bottlebrush squirreltail	10
				Needleandthread	5
				Hood phlox	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
				Penstemon	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
65----------------- Taylorsflat	Semidesert Alkali Loam (Black Greasewood)	Favorable	750	Wyoming big sagebrush----------	20
		Normal	600	Black greasewood----------------	20
		Unfavorable	300	Bottlebrush squirreltail--------	15
				Indian ricegrass----------------	5
				Milkvetch-----------------------	5
				Nevada bluegrass----------------	5
				Other shrubs--------------------	5
				Other perennial forbs-----------	5
				Shadscale-----------------------	5
				Douglas rabbitbrush-------------	5
				Scarlet globemallow-------------	5
65A:					
Theriot----------	Desert Shallow Loam (Shadscale)	Favorable	300	Shadscale-----------------------	30
		Normal	200	Bud sagebrush-------------------	10
		Unfavorable	100	Galleta-------------------------	10
				Indian ricegrass----------------	10
				Bottlebrush squirreltail--------	5
				Douglas rabbitbrush-------------	5
				Winterfat-----------------------	5
Rock outcrop.					
66----------------- Timpie	Desert Loam (Shadscale)	Favorable	600	Indian ricegrass----------------	20
		Normal	500	Shadscale-----------------------	20
		Unfavorable	400	Bud sagebrush-------------------	10
				Winterfat-----------------------	10
				Bottlebrush squirreltail--------	10
				Other shrubs--------------------	10
				Milkvetch-----------------------	5
				Other perennial grasses---------	5
				Other perennial forbs-----------	5
				Scarlet globemallow-------------	5
67----------------- Timpie	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood----------------	50
		Normal	700	Bottlebrush squirreltail--------	15
		Unfavorable	350	Other perennial grasses---------	5
				Shadscale-----------------------	5
				Other annual forbs--------------	5
				Seepweed------------------------	5
				Trident saltbush----------------	5
				Alkali sacaton------------------	5
				Other shrubs--------------------	5
68:					
Timpie-----------	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood----------------	50
		Normal	700	Bottlebrush squirreltail--------	15
		Unfavorable	350	Other perennial grasses---------	5
				Shadscale-----------------------	5
				Other annual forbs--------------	5
				Seepweed------------------------	5
				Trident saltbush----------------	5
				Alkali sacaton------------------	5
				Other shrubs--------------------	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
68:					
Tooele	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood	50
		Normal	700	Bottlebrush squirreltail	15
		Unfavorable	300	Other perennial grasses	5
				Shadscale	5
				Other annual forbs	5
				Seepweed	5
				Trident saltbush	5
				Alkali sacaton	5
				Other shrubs	5
69 Tooele	Desert Loam (Shadscale)	Favorable	600	Indian ricegrass	20
		Normal	500	Shadscale	20
		Unfavorable	400	Bud sagebrush	10
				Winterfat	10
				Bottlebrush squirreltail	10
				Other shrubs	10
				Milkvetch	5
				Other perennial grasses	5
				Other perennial forbs	5
				Scarlet globemallow	5
70 Tooele	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood	50
		Normal	700	Bottlebrush squirreltail	15
		Unfavorable	300	Other perennial grasses	5
				Shadscale	5
				Other annual forbs	5
				Seepweed	5
				Trident saltbush	5
				Alkali sacaton	5
				Other shrubs	5
71 Yeates Hollow	Mountain Gravelly Loam (Mountain Big Sagebrush)	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,325	Birchleaf mountainmahogany	15
		Unfavorable	800	Mountain big sagebrush	10
				Bluegrass	10
				Phlox	5
				Western wheatgrass	5
				Other perennial forbs	5
				Saskatoon serviceberry	5
				Other perennial grasses	5
				Mountain snowberry	5
				Antelope bitterbrush	5
				Gambel oak	5
				Needlegrass	5
72 Yeates Hollow	Upland Claypan (Low Sagebrush)	Favorable	700	Low sagebrush	25
		Normal	500	Bluebunch wheatgrass	15
		Unfavorable	300	Other perennial grasses	15
				Bluegrass	10
				Mountain big sagebrush	5
				Other perennial forbs	5
				Phlox	5
				Western wheatgrass	5
				Needlegrass	5
				Antelope bitterbrush	5
				Other shrubs	5

TABLE 6.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Map symbol and soil name	Range site or woodland site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
73-------------- Yenrab	Desert Sand (Fourwing Saltbush)	Favorable	800	Indian ricegrass	25
		Normal	550	Fourwing saltbush	20
		Unfavorable	300	Winterfat	10
				Spiny hopsage	5
				Milkvetch	5
				Galleta	5
				Horsebrush	5
				Mormon tea	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
				Other shrubs	5
74:					
Yenrab----------	Desert Sand (Fourwing Saltbush)	Favorable	800	Indian ricegrass	25
		Normal	550	Fourwing saltbush	20
		Unfavorable	300	Winterfat	10
				Spiny hopsage	5
				Milkvetch	5
				Galleta	5
				Horsebrush	5
				Mormon tea	5
				Other perennial forbs	5
				Other perennial grasses	5
				Bottlebrush squirreltail	5
				Other shrubs	5
Badlands.					
75:					
Yenrab----------	Desert Alkali Sand (Fourwing Saltbush)	Favorable	700	Indian ricegrass	30
		Normal	500	Fourwing saltbush	15
		Unfavorable	350	Douglas rabbitbrush	10
				Other shrubs	10
				Alkali sacaton	10
				Black greasewood	10
				Other perennial grasses	5
				Bottlebrush squirreltail	5
				Other perennial forbs	5
Tooele----------	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood	50
		Normal	700	Bottlebrush squirreltail	15
		Unfavorable	300	Other perennial grasses	5
				Shadscale	5
				Other annual forbs	5
				Seepweed	5
				Trident saltbush	5
				Alkali sacaton	5
				Other shrubs	5

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed)

Map symbol and soil name	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class*	
2----------------	OF	Slight	Slight	Severe	Slight	Moderate	Utah juniper--	50	---	Utah juniper, pinyon.
Abela							Pinyon--------	50	---	
3, 4:										
Amtoft----------	OR	Severe	Severe	Severe	Severe	Severe	Utah juniper--	30	---	Utah juniper.
Rock outcrop.										
5:										
Berent----------	OS	Slight	Slight	Severe	Slight	Moderate	Utah juniper--	25	---	Utah juniper.
Hiko Peak.										
7----------------	OD	Moderate	Slight	Moderate	Slight	Slight	Utah juniper--	40	---	Utah juniper, pinyon.
Borvant							Pinyon--------	40	---	
14, 14A:										
Dateman---------	1R	Severe	Severe	Slight	Slight	Moderate	Douglas-fir---	65	1	Douglas-fir.
							White fir-----	60	9	
Podmor.										
Rock outcrop.										
20:										
Flygare---------	2R	Severe	Severe	Slight	Slight	Moderate	Quaking aspen-	55	2	---
							White fir-----	31	4	
Dateman---------	1R	Severe	Severe	Slight	Slight	Moderate	Douglas-fir---	65	1	Douglas-fir.
							White fir-----	60	9	
Rock outcrop.										
38:										
Lodar-----------	OR	Severe	Severe	Severe	Severe	Moderate	Utah juniper--	40	---	Utah juniper, pinyon.
							Pinyon--------	40	---	
Lundy.										
Rock outcrop.										
40:										
Lundy.										
Dateman---------	1R	Severe	Severe	Slight	Slight	Moderate	Douglas-fir---	65	1	Douglas-fir.
							White fir-----	60	9	
Rock outcrop.										
46A:										
Podmor.										
Dateman---------	1R	Severe	Severe	Slight	Slight	Moderate	Douglas-fir---	65	1	Douglas-fir.
							White fir-----	60	9	
Rock outcrop.										

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordi-nation symbol	Management concerns: Erosion hazard	Management concerns: Equip-ment limita-tion	Management concerns: Seedling mortal-ity	Management concerns: Wind-throw hazard	Management concerns: Plant competi-tion	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Produc-tivity class*	Trees to plant
48:										
Reywat----------	OR	Severe	Severe	Severe	Severe	Moderate	Utah juniper-- Pinyon--------	40 40	--- ---	Utah juniper, pinyon.
Broad.										
Rock outcrop.										
55:										
Scalade.										
Jericho---------	OD	Moderate	Severe	Moderate	Severe	Severe	Utah juniper--	15	---	---

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

TABLE 8.--RECREATIONAL DEVELOPMENT

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
1---------------- Abela	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.	Moderate: small stones, large stones, droughty.
2---------------- Abela	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Moderate: dusty.	Severe: small stones.
3, 4:					
Amtoft----------	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
Rock outcrop.					
5:					
Berent----------	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.	Moderate: droughty, slope.
Hiko Peak-------	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.	Moderate: small stones, large stones, droughty.
6---------------- Birdow	Severe: flooding.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.	Slight.
7---------------- Borvant	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, small stones, cemented pan.	Moderate: dusty.	Severe: droughty, cemented pan.
8---------------- Bramwell	Severe: excess salt.	Severe: excess salt.	Severe: excess salt.	Moderate: dusty.	Severe: excess salt.
10:					
Broad-----------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Reywat----------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones, slope.
Rock outcrop.					
11:					
Checkett--------	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
Rock outcrop.					

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
12 Cliffdown	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, droughty, slope.
13 Cristo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
14, 14A:					
Dateman	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Podmor	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.	Severe: large stones, slope.
Rock outcrop.					
15 Doyce	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.	Slight.
16. Dune land.					
17 Dynal	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
18:					
Dynal	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Severe: droughty.
Tooele	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight	Severe: excess sodium.
19 Erda	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.	Slight.
20:					
Flygare	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
Dateman	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Rock outcrop.					
21 Hiko Peak	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.	Moderate: small stones, large stones, droughty.
22 Hiko Peak	Severe: small stones.	Severe: small stones.	Severe: large stones, small stones.	Moderate: dusty.	Severe: small stones.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
23:					
Hiko Peak	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.	Moderate: small stones, large stones, droughty.
Checkett	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
24:					
Hiko Peak	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.	Moderate: small stones, large stones, droughty.
Taylorsflat	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.	Slight.
25 Hiko Springs	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, droughty.
26 Holmes	Severe: small stones.	Severe: small stones.	Severe: large stones, slope, small stones.	Slight	Severe: small stones.
27:					
Izamatch	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Severe: droughty.
Cliffdown	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones, droughty.
28:					
Izamatch	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones, droughty.
Cliffdown	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, droughty, slope.
29 Jericho	Severe: cemented pan.	Severe: cemented pan.	Severe: small stones, cemented pan.	Slight	Severe: droughty, cemented pan.
30 Junkett	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.	Moderate: small stones, droughty.
31 Kanosh	Moderate: wetness, dusty, excess salt.	Moderate: wetness, excess salt, dusty.	Moderate: wetness, dusty.	Moderate: dusty.	Moderate: excess salt, droughty.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
32:					
Kanosh	Moderate: wetness, dusty, excess salt.	Moderate: wetness, excess salt, dusty.	Moderate: wetness, dusty.	Moderate: dusty.	Moderate: excess salt, droughty.
Saltair	Severe: flooding, wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness, flooding, excess salt.	Severe: wetness	Severe: excess salt, wetness, flooding.
Logan	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
33 Kapod	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.	Moderate: small stones, large stones, droughty.
34 Kapod	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.	Moderate: small stones, large stones, droughty.
35 Kapod	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.	Severe: small stones, large stones.
36 Kilburn	Moderate: small stones.	Moderate: small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, droughty.
37 Lakewin	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.	Moderate: small stones, large stones, droughty.
38:					
Lodar	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
Lundy	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
Rock outcrop.					
39 Logan	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
40:					
Lundy	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
40:					
Dateman	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Rock outcrop.					
41 Manassa	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight.
42 Medburn	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
43 Medburn	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight	Severe: excess sodium.
44. Pits					
45. Playas					
46:					
Playas.					
Saltair	Severe: flooding, wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness, flooding, excess salt.	Severe: wetness.	Severe: excess salt, wetness, flooding.
46A:					
Podmor	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.	Severe: large stones, slope.
Dateman	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Rock outcrop.					
47:					
Podmor	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.	Severe: large stones, slope.
Onaqui	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.	Severe: small stones, large stones, slope.
Rock outcrop.					
48:					
Reywat	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
48:					
Broad	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
49:					
Ridd	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, slope.
Rock outcrop.					
50:					
Ridd	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: small stones, slope.
Wasatch	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Rock outcrop.					
51:					
Rock outcrop.					
Lundy	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, large stones, slope.
52. Salt flats					
53:					
Saltair	Severe: flooding, wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness, flooding, excess salt.	Severe: wetness.	Severe: excess salt, wetness, flooding.
Playas.					
54 Scalade	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.
55:					
Scalade	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.
Jericho	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, small stones, cemented pan.	Slight	Severe: droughty, cemented pan.
Medburn	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: droughty.
56 Skumpah	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: excess sodium, droughty.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
57, 58, 59: Skumpah	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: excess sodium.
60:					
Skumpah	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: excess sodium.
Yenrab	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Moderate: too sandy.	Severe: excess sodium.
61. Slickens and mine dumps					
62: Spager	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, small stones, cemented pan.	Moderate: dusty.	Severe: droughty.
63: Springmeyer	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, droughty.
64: Taylorsflat	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.	Slight.
65: Taylorsflat	Moderate: dusty.	Moderate: dusty.	Moderate: small stones, dusty.	Moderate: dusty.	Slight.
65A:					
Theriot	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, droughty, slope.
Rock outcrop.					
66: Timpie	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: excess sodium.
67: Timpie	Moderate: dusty, excess salt.	Moderate: excess salt, dusty.	Moderate: slope, dusty, excess salt.	Moderate: dusty.	Moderate: excess salt, droughty.
68:					
Timpie	Moderate: dusty, excess salt.	Moderate: excess salt, dusty.	Moderate: slope, dusty, excess salt.	Moderate: dusty.	Moderate: excess salt, droughty.
Tooele	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight	Severe: excess sodium.
69: Tooele	Slight	Slight	Moderate: slope.	Slight	Slight.
70: Tooele	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight	Severe: excess sodium.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
71-------------- Yeates Hollow	Moderate: slope, large stones, dusty.	Moderate: slope, large stones, dusty.	Severe: large stones, slope, small stones.	Moderate: large stones, dusty.	Moderate: small stones, large stones, droughty.
72-------------- Yeates Hollow	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.	Severe: small stones, large stones.
73-------------- Yenrab	Severe: too sandy, excess sodium.	Severe: too sandy, excess sodium.	Severe: slope, too sandy, excess sodium.	Severe: too sandy.	Severe: excess sodium.
74:					
Yenrab----------	Severe: too sandy, excess sodium.	Severe: too sandy, excess sodium.	Severe: slope, too sandy, excess sodium.	Severe: too sandy.	Severe: excess sodium.
Badlands.					
75:					
Yenrab----------	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Moderate: too sandy.	Severe: excess sodium.
Tooele----------	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight-----------	Severe: excess sodium.

TABLE 9.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
1, 2-------------- Abela	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
3, 4:											
Amtoft----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Rock outcrop.											
5:											
Berent----------	Very poor.	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Hiko Peak-------	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
6--------------- Birdow	Poor	Poor	Fair	Poor	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
7--------------- Borvant	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
8--------------- Bramwell	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Fair	---	---	---	---
10:											
Broad-----------	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Reywat----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
11:											
Checkett--------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Rock outcrop.											
12-------------- Cliffdown	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
13-------------- Cristo	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
14, 14A:											
Dateman---------	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Podmor----------	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Rock outcrop.											
15-------------- Doyce	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
16. Dune land											
17. Dynal	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
18:											
Dynal	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Tooele	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
19. Erda	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
20:											
Flygare	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Dateman	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Rock outcrop.											
21. Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
22. Hiko Peak	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
23:											
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Checkett	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
24:											
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Taylorsflat	Poor	Poor	Fair	Poor	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
25. Hiko Springs	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
26. Holmes	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
27, 28:											
Izamatch	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Cliffdown	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
29. Jericho	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
30 Junkett	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
31 Kanosh	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Fair	Very poor.	Very poor.	Fair	Very poor.
32:											
Kanosh	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Fair	Fair	Very poor.	Very poor.	Fair	Very poor.
Saltair	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Logan	Very poor.	Very poor.	Fair	Poor	Fair	Good	Good	Poor	Fair	Good	Fair.
33, 34, 35 Kapod	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
36 Kilburn	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
37 Lakewin	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
38:											
Lodar	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Lundy	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
39 Logan	Very poor.	Very poor.	Fair	Poor	Fair	Good	Good	Poor	Fair	Good	Fair.
40:											
Lundy	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Dateman	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Rock outcrop.											
41 Manassa	Poor	Poor	Fair	Poor	Fair	Poor	Very poor.	Fair	Fair	Very poor.	Fair.
42 Medburn	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
43 Medburn	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
44. Pits											
45. Playas											

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
46:											
Playas.											
Saltair	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
46A:											
Podmor	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Dateman	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Rock outcrop.											
47:											
Podmor	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Onaqui	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
48:											
Reywat	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Broad	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Rock outcrop.											
49:											
Ridd	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Rock outcrop.											
50:											
Ridd	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Wasatch	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Rock outcrop.											
51:											
Rock outcrop.											
Lundy	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
52.											
Salt flats											
53:											
Saltair	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Playas.											

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
54: Scalade	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor.
55:											
Scalade	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Poor.
Jericho	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Medburn	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
56: Skumpah	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
57, 58: Skumpah	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.
59: Skumpah	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
60:											
Skumpah	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Yenrab	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
61. Slickens and mine dumps											
62: Spager	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
63: Springmeyer	Poor	Poor	Fair	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
64, 65: Taylorsflat	Poor	Poor	Fair	Poor	Fair	Poor	Very poor.	Poor	Fair	Very poor.	Fair.
65A:											
Theriot	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Rock outcrop.											
66, 67: Timpie	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
68:											
Timpie	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Tooele	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
69: Tooele	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
70---------------- Tooele	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
71, 72----------- Yeates Hollow	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
73---------------- Yenrab	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
74:											
Yenrab-----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Badlands.											
75:											
Yenrab-----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Tooele-----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.

TABLE 10.--BUILDING SITE DEVELOPMENT

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
1: Abela	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones, large stones, droughty.
2: Abela	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Severe: small stones.
3, 4: Amtoft	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: small stones, large stones, slope.
Rock outcrop.						
5: Berent	Severe: cutbanks cave	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Hiko Peak	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, large stones, droughty.
6: Birdow	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
7: Borvant	Severe: cemented pan, cutbanks cave.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Severe: droughty, cemented pan.
8: Bramwell	Moderate: wetness.	Slight	Moderate: wetness, shrink-swell.	Slight	Severe: low strength, frost action.	Severe: excess salt.
10: Broad	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Reywat	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope.
Rock outcrop.						
11: Checkett	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Rock outcrop.						

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
12: Cliffdown	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
13: Cristo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
14, 14A:						
Dateman	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Podmor	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Rock outcrop.						
15: Doyce	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
16. Dune land						
17: Dynal	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
18:						
Dynal	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
Tooele	Slight	Slight	Slight	Slight	Slight	Severe: excess sodium.
19: Erda	Slight	Slight	Slight	Slight	Moderate: low strength, frost action.	Slight.
20:						
Flygare	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Dateman	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
21: Hiko Peak	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, large stones, droughty.
22: Hiko Peak	Slight	Slight	Slight	Moderate: slope.	Slight	Severe: small stones.
23:						
Hiko Peak	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, large stones, droughty.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
23:						
Checkett	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
24:						
Hiko Peak	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, large stones, droughty.
Taylorsflat	Slight	Slight	Slight	Slight	Moderate: frost action.	Slight.
25 Hiko Springs	Slight	Slight	Slight	Slight	Slight	Moderate: small stones, droughty.
26 Holmes	Severe: cutbanks cave.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, frost action, large stones.	Severe: small stones.
27:						
Izamatch	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: droughty.
Cliffdown	Slight	Slight	Slight	Moderate: slope.	Slight	Severe: small stones, droughty.
28:						
Izamatch	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Severe: small stones, droughty.
Cliffdown	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
29 Jericho	Severe: cemented pan, cutbanks cave.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: slope, cemented pan.	Moderate: cemented pan, frost action.	Severe: droughty, cemented pan.
30 Junkett	Severe: cemented pan, cutbanks cave.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.	Moderate: small stones, droughty.
31 Kanosh	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: excess salt, droughty.
32:						
Kanosh	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: excess salt, droughty.
Saltair	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: excess salt, wetness, flooding.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
32:						
Logan	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
33 Kapod	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: frost action, large stones.	Moderate: small stones, large stones, droughty.
34 Kapod	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: small stones, large stones, droughty.
35 Kapod	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones.
36 Kilburn	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones, droughty.
37 Lakewin	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Moderate: small stones, large stones, droughty.
38:						
Lodar	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Lundy	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Rock outcrop.						
39 Logan	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
40:						
Lundy	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Dateman	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
41 Manassa	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength, frost action.	Slight.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
42------------- Medburn	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
43------------- Medburn	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Severe: excess sodium.
44. Pits						
45. Playas						
46: Playas.						
Saltair---------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: excess salt, wetness, flooding.
46A: Podmor----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Dateman---------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
47: Podmor----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
Onaqui----------	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: small stones, large stones, slope.
Rock outcrop.						
48: Reywat----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
Broad-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
49: Ridd------------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Rock outcrop.						

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
50:						
Ridd------------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Wasatch---------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
51:						
Rock outcrop.						
Lundy-----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, slope.
52.						
Salt flats						
53:						
Saltair---------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: excess salt, wetness, flooding.
Playas.						
54--------------- Scalade	Severe: cemented pan, cutbanks cave.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan, frost action.	Severe: cemented pan.
55:						
Scalade---------	Severe: cemented pan, cutbanks cave.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan, frost action.	Severe: cemented pan.
Jericho---------	Severe: cemented pan, cutbanks cave.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Moderate: cemented pan, slope, frost action.	Severe: droughty, cemented pan.
Medburn---------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: droughty.
56--------------- Skumpah	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: excess sodium, droughty.
57, 58----------- Skumpah	Moderate: wetness.	Moderate: shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: excess sodium.
59--------------- Skumpah	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: excess sodium.
60:						
Skumpah---------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: excess sodium.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
60:						
Yenrab----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: excess sodium.
61. Slickens and mine dumps						
62--------------- Spager	Severe: cemented pan, cutbanks cave.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Severe: droughty.
63--------------- Springmeyer	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell, slope.	Moderate: shrink-swell, frost action.	Moderate: small stones, droughty.
64, 65----------- Taylorsflat	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Slight.
65A:						
Theriot---------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
Rock outcrop.						
66--------------- Timpie	Slight---------	Slight---------	Slight---------	Slight---------	Severe: frost action.	Severe: excess sodium.
67--------------- Timpie	Slight---------	Slight---------	Slight---------	Slight---------	Severe: frost action.	Moderate: excess salt, droughty.
68:						
Timpie----------	Slight---------	Slight---------	Slight---------	Slight---------	Severe: frost action.	Moderate: excess salt, droughty.
Tooele----------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Severe: excess sodium.
69--------------- Tooele	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
70--------------- Tooele	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Severe: excess sodium.
71--------------- Yeates Hollow	Moderate: large stones, slope.	Moderate: shrink-swell, slope, large stones.	Moderate: slope, shrink-swell, large stones.	Severe: slope.	Moderate: shrink-swell, slope, frost action.	Moderate: small stones, large stones, droughty.
72--------------- Yeates Hollow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, large stones.
73--------------- Yenrab	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: excess sodium.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
74:						
Yenrab----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: excess sodium.
Badlands.						
75:						
Yenrab----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: excess sodium.
Tooele----------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Severe: excess sodium.

TABLE 11.--SANITARY FACILITIES

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1----------------- Abela	Slight------------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
2----------------- Abela	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
3, 4:					
Amtoft-----------	Severe: depth to rock, slope, large stones.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
5:					
Berent-----------	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: too sandy.
Hiko Peak--------	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
6----------------- Birdow	Moderate: flooding, percs slowly.	Moderate: seepage, slope.	Moderate: flooding.	Moderate: flooding.	Good.
7----------------- Borvant	Severe: cemented pan.	Severe: cemented pan, slope.	Severe: cemented pan, too sandy, large stones.	Severe: cemented pan.	Poor: cemented pan, seepage, too sandy.
8----------------- Bramwell	Severe: wetness, percs slowly.	Slight------------	Severe: wetness.	Severe: wetness.	Fair: wetness.
10:					
Broad------------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Reywat-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
11:					
Checkett---------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
12---------------- Cliffdown	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
13---------------- Cristo	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
14, 14A:					
Dateman----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Podmor-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, large stones, slope.
Rock outcrop.					
15---------------- Doyce	Moderate: percs slowly.	Moderate: seepage, slope.	Slight------------	Slight------------	Good.
16. Dune land					
17---------------- Dynal	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: seepage, too sandy.
18:					
Dynal------------	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: seepage, too sandy.
Tooele-----------	Slight------------	Severe: seepage.	Slight------------	Slight------------	Good.
19---------------- Erda	Severe: percs slowly.	Moderate: slope.	Slight------------	Slight------------	Good.
20:					
Flygare----------	Severe: slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Dateman----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
21---------------- Hiko Peak	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
22---------------- Hiko Peak	Slight------------	Severe: seepage.	Slight------------	Slight------------	Poor: seepage, small stones.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
23:					
Hiko Peak	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
Checkett	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: depth to rock, small stones, slope.
24:					
Hiko Peak	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
Taylorsflat	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
25 Hiko Springs	Slight	Severe: seepage.	Slight	Slight	Fair: small stones.
26 Holmes	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
27:					
Izamatch	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy, small stones.
Cliffdown	Slight	Severe: seepage.	Slight	Slight	Poor: small stones.
28:					
Izamatch	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy, small stones.
Cliffdown	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
29 Jericho	Severe: cemented pan, poor filter.	Severe: seepage, cemented pan.	Moderate: cemented pan, too sandy.	Slight	Poor: cemented pan, seepage, small stones.
30 Junkett	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan, too sandy.	Slight	Poor: cemented pan, seepage, too sandy.
31 Kanosh	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
32:					
Kanosh	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
32:					
Saltair	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, excess salt.	Severe: flooding, wetness.	Poor: wetness.
Logan	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
33 Kapod	Moderate: percs slowly, large stones.	Moderate: seepage, slope, large stones.	Moderate: large stones.	Slight	Poor: small stones.
34 Kapod	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: small stones, slope.
35 Kapod	Severe: slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: small stones, slope.
36 Kilburn	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
37 Lakewin	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy, small stones.
38:					
Lodar	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Lundy	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
39 Logan	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
40:					
Lundy	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Dateman	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
40: Rock outcrop.					
41------------- Manassa	Severe: percs slowly.	Slight-----------	Slight-----------	Slight-----------	Good.
42, 43----------- Medburn	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Good.
44. Pits					
45. Playas					
46: Playas.					
Saltair---------	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, excess salt.	Severe: flooding, wetness.	Poor: wetness.
46A: Podmor----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, large stones, slope.
Dateman---------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
47: Podmor----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, large stones, slope.
Onaqui----------	Severe: depth to rock, slope, large stones.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
48: Reywat----------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Broad-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
49:					
Ridd	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
50:					
Ridd	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Wasatch	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, slope.
Rock outcrop.					
51:					
Rock outcrop.					
Lundy	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
52. Salt flats					
53:					
Saltair	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, excess salt.	Severe: flooding, wetness.	Poor: wetness.
Playas.					
54 Scalade	Severe: cemented pan.	Severe: seepage, cemented pan.	Moderate: cemented pan, too sandy.	Slight	Poor: cemented pan, seepage, small stones.
55:					
Scalade	Severe: cemented pan.	Severe: seepage, cemented pan.	Moderate: cemented pan, too sandy.	Slight	Poor: cemented pan, seepage, small stones.
Jericho	Severe: cemented pan, poor filter.	Severe: seepage, cemented pan, slope.	Moderate: cemented pan, slope, too sandy.	Moderate: slope.	Poor: cemented pan, seepage, small stones.
Medburn	Slight	Severe: seepage.	Slight	Slight	Good.
56 Skumpah	Severe: percs slowly.	Slight	Severe: excess salt.	Slight	Good.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
57, 58 Skumpah	Severe: wetness, percs slowly.	Moderate: wetness.	Severe: wetness, excess salt.	Moderate: wetness.	Good.
59 Skumpah	Severe: percs slowly.	Slight	Severe: excess salt.	Slight	Good.
60:					
Skumpah	Severe: percs slowly.	Slight	Severe: excess salt.	Slight	Good.
Yenrab	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: too sandy.
61:					
Slickens and mine dumps					
62 Spager	Severe: cemented pan.	Severe: seepage, cemented pan, slope.	Severe: cemented pan, too sandy.	Moderate: slope.	Poor: cemented pan, seepage, too sandy.
63 Springmeyer	Severe: percs slowly.	Severe: seepage.	Moderate: too sandy.	Slight	Poor: seepage, small stones.
64 Taylorsflat	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
65 Taylorsflat	Severe: percs slowly.	Slight	Slight	Slight	Good.
65A:					
Theriot	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
66 Timpie	Severe: percs slowly.	Slight	Severe: excess salt.	Slight	Good.
67 Timpie	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
68:					
Timpie	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
Tooele	Slight	Severe: seepage.	Slight	Slight	Good.
69 Tooele	Slight	Severe: seepage.	Slight	Slight	Fair: thin layer.
70 Tooele	Slight	Severe: seepage.	Slight	Slight	Good.
71 Yeates Hollow	Severe: percs slowly.	Severe: slope.	Severe: large stones.	Moderate: slope.	Poor: small stones.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
72---------------- Yeates Hollow	Severe: percs slowly, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
73---------------- Yenrab	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: too sandy.
74:					
Yenrab----------	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: too sandy.
Badlands.					
75:					
Yenrab----------	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: too sandy.
Tooele----------	Slight------------	Severe: seepage.	Slight------------	Slight------------	Good.

TABLE 12.--CONSTRUCTION MATERIALS

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
1: Abela	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
2: Abela	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
3, 4:				
Amtoft	Poor: depth to rock, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
5:				
Berent	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
6: Birdow	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
7: Borvant	Poor: cemented pan.	Probable	Probable	Poor: cemented pan, small stones, area reclaim.
8: Bramwell	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
10:				
Broad	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Reywat	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
11:				
Checkett	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
12: Cliffdown	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
13: Cristo	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
14, 14A:				
Dateman	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Podmor	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
15: Doyce	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
16. Dune land				
17: Dynal	Good	Probable	Improbable: too sandy.	Poor: too sandy.
18:				
Dynal	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Tooele	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
19: Erda	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
20:				
Flygare	Poor: slope.	Improbable: small stones.	Probable	Poor: small stones, area reclaim, slope.
Dateman	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
21: Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
22: Hiko Peak	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
23:				
Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Checkett	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
24:				
Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Taylorsflat	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
25 Hiko Springs	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
26 Holmes	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
27:				
Izamatch	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Cliffdown	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, excess salt.
28:				
Izamatch	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Cliffdown	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
29 Jericho	Poor: thin layer.	Improbable: small stones.	Improbable: thin layer.	Poor: cemented pan, small stones.
30 Junkett	Poor: cemented pan.	Probable	Probable	Poor: small stones, area reclaim.
31 Kanosh	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
32:				
Kanosh	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Saltair	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, wetness.
Logan	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
33 Kapod	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
34, 35 Kapod	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
36 Kilburn	Good	Probable	Probable	Poor: small stones, area reclaim.
37 Lakewin	Good	Probable	Probable	Poor: small stones, area reclaim.
38:				
Lodar	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Lundy	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
39 Logan	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
40:				
Lundy	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Dateman	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
41 Manassa	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
42 Medburn	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
43 Medburn	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
44. Pits				
45. Playas				
46:				
Playas.				
Saltair	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, wetness.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
46A:				
Podmor	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Dateman	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
47:				
Podmor	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Onaqui	Poor: depth to rock, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
48:				
Reywat	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Broad	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
49:				
Ridd	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
50:				
Ridd	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Wasatch	Fair: slope.	Probable	Improbable: too sandy.	Poor: too sandy, slope.
Rock outcrop.				
51:				
Rock outcrop.				
Lundy	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
52. Salt flats				

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
53:				
Saltair	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, wetness.
Playas.				
54 Scalade	Poor: thin layer.	Improbable: thin layer.	Improbable: thin layer.	Poor: cemented pan, small stones, area reclaim.
55:				
Scalade	Poor: thin layer.	Improbable: thin layer.	Improbable: thin layer.	Poor: cemented pan, small stones, area reclaim.
Jericho	Poor: thin layer.	Improbable: small stones.	Improbable: thin layer.	Poor: cemented pan, small stones.
Medburn	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
56, 57, 58, 59 Skumpah	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
60:				
Skumpah	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Yenrab	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, excess sodium.
61. Slickens and mine dumps				
62 Spager	Poor: cemented pan.	Probable	Probable	Poor: cemented pan, small stones, area reclaim.
63 Springmeyer	Good	Probable	Probable	Poor: small stones, area reclaim.
64, 65 Taylorsflat	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
65A:				
Theriot	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
66: Timpie	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
67: Timpie	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
68:				
Timpie	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Tooele	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
69: Tooele	Good	Probable	Improbable: too sandy.	Fair: small stones, excess salt.
70: Tooele	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
71: Yeates Hollow	Fair: large stones.	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
72: Yeates Hollow	Fair: large stones, slope.	Improbable: small stones.	Probable	Poor: small stones, area reclaim, slope.
73: Yenrab	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, excess sodium.
74:				
Yenrab	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, excess sodium.
Badlands.				
75:				
Yenrab	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, excess sodium.
Tooele	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.

TABLE 13.--WATER MANAGEMENT

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
1: Abela	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty.	Favorable	Droughty.
2: Abela	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones.	Large stones, slope, droughty.
3, 4:							
Amtoft	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Too arid, large stones, slope.
Rock outcrop.							
5:							
Berent	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Too arid, slope, droughty.
Hiko Peak	Severe: seepage, slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones.	Too arid, large stones, slope.
6: Birdow	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Favorable	Favorable.
7: Borvant	Severe: cemented pan, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, cemented pan.	Large stones, slope, droughty.
8: Bramwell	Slight	Severe: piping.	Severe: slow refill.	Percs slowly, frost action, excess salt.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Too arid, excess salt, erodes easily.
10:							
Broad	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Reywat	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
10: Rock outcrop.							
11: Checkett--------	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Too arid, large stones, slope.
Rock outcrop.							
12--------------- Cliffdown	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, excess salt.	Slope----------	Too arid, slope, droughty.
13--------------- Cristo	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.	Slope, droughty, depth to rock.
14, 14A: Dateman---------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Podmor----------	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
15--------------- Doyce	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope----------	Favorable------	Favorable.
16. Dune land							
17--------------- Dynal	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Too arid, slope, excess salt.
18: Dynal-----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Too arid, slope, excess salt.
Tooele----------	Severe: seepage.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Droughty, soil blowing.	Erodes easily, soil blowing.	Too arid, excess salt, excess sodium.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
19: Erda	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, excess salt.	Erodes easily	Erodes easily.
20:							
Flygare	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
Dateman	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
21: Hiko Peak	Severe: seepage, slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones.	Too arid, large stones, slope.
22: Hiko Peak	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Large stones	Too arid, large stones, droughty.
23:							
Hiko Peak	Severe: seepage, slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones.	Too arid, large stones, slope.
Checkett	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Too arid, large stones, slope.
24:							
Hiko Peak	Severe: seepage, slope.	Moderate: seepage, piping, large stones.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones.	Too arid, large stones, slope.
Taylorsflat	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, excess salt.	Erodes easily	Too arid, erodes easily.
25: Hiko Springs	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, excess salt.	Favorable	Too arid, droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
26: Holmes	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
27:							
Izamatch	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, rooting depth.	Too sandy	Too arid, droughty.
Cliffdown	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, excess salt.	Favorable	Too arid, droughty.
28:							
Izamatch	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, rooting depth.	Too sandy	Too arid, droughty.
Cliffdown	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, excess salt.	Slope	Too arid, slope, droughty.
29: Jericho	Severe: seepage, cemented pan.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, cemented pan.	Large stones, cemented pan.	Too arid, large stones.
30: Junkett	Moderate: seepage, cemented pan, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, cemented pan.	Large stones, cemented pan.	Too arid, large stones.
31: Kanosh	Severe: seepage.	Severe: piping.	Moderate: deep to water, salty water.	Frost action, excess salt.	Wetness, droughty, excess salt.	Erodes easily, wetness	Too arid, excess salt, erodes easily.
32:							
Kanosh	Severe: seepage.	Severe: piping.	Moderate: deep to water, salty water.	Frost action, excess salt.	Wetness, droughty, excess salt.	Erodes easily, wetness.	Too arid, excess salt, erodes easily.
Saltair	Slight	Severe: wetness, excess salt.	Severe: slow refill, salty water.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Too arid, wetness, excess salt.
Logan	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Wetness, percs slowly, flooding.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
33 Kapod	Moderate: seepage, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones	Large stones, droughty.
34, 35:							
Kapod	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
36 Kilburn	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
37 Lakewin	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Too sandy	Droughty.
38:							
Lodar	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Lundy	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
39 Logan	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding, frost action.	Wetness, percs slowly, flooding.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
40:							
Lundy	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Dateman	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
41 Manassa	Slight	Severe: piping.	Severe: no water.	Deep to water	Percs slowly, erodes easily, excess salt.	Erodes easily, percs slowly.	Too arid, erodes easily, percs slowly.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
42: Medburn	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Soil blowing	Too arid, droughty.
43: Medburn	Severe: seepage.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Soil blowing	Too arid, excess sodium, droughty.
44. Pits							
45. Playas							
46: Playas.							
Saltair	Slight	Severe: wetness, excess salt.	Severe: slow refill, salty water.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Too arid, wetness, excess salt.
46A: Podmor	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Dateman	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
47: Podmor	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Onaqui	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
48: Reywat	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
48:							
Broad	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
49:							
Ridd	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
50:							
Ridd	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Wasatch	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Slope, droughty.
Rock outcrop.							
51:							
Rock outcrop.							
Lundy	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
52.							
Salt flats							
53:							
Saltair	Slight	Severe: wetness, excess salt.	Severe: slow refill, salty water.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Too arid, wetness, excess salt.
Playas.							
54	Severe: seepage, cemented pan.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Cemented pan, erodes easily, too sandy.	Too arid, erodes easily, droughty.
Scalade							

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
55:							
Scalade	Severe: seepage, cemented pan.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Cemented pan, erodes easily, too sandy.	Too arid, erodes easily, droughty.
Jericho	Severe: seepage, cemented pan, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, cemented pan.	Slope, large stones, cemented pan.	Too arid, large stones, slope.
Medburn	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Soil blowing	Too arid, droughty.
56 Skumpah	Slight	Severe: piping, excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty, erodes easily, excess sodium.	Erodes easily	Too arid, excess salt, excess sodium.
57, 58 Skumpah	Slight	Severe: piping, excess sodium, excess salt.	Severe: slow refill, salty water.	Deep to water	Droughty, erodes easily, excess sodium.	Erodes easily	Too arid, excess sodium, erodes easily.
59 Skumpah	Slight	Severe: piping, excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty, erodes easily, excess sodium.	Erodes easily	Too arid, excess salt, excess sodium.
60:							
Skumpah	Slight	Severe: piping, excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty, erodes easily, excess sodium.	Erodes easily	Too arid, excess salt, excess sodium.
Yenrab	Severe: seepage, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Too arid, slope, excess sodium.
61. Slickens and mine dumps							
62 Spager	Severe: cemented pan, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, cemented pan.	Too arid, large stones, slope.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
63: Springmeyer	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Too sandy	Too arid, droughty.
64: Taylorsflat	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, excess salt.	Erodes easily	Too arid, erodes easily.
65: Taylorsflat	Slight	Severe: piping.	Severe: no water.	Deep to water	Excess salt	Erodes easily	Too arid, erodes easily.
65A: Theriot	Severe: depth to rock, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Too arid, large stones, slope.
Rock outcrop.							
66: Timpie	Slight	Severe: piping, excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty	Erodes easily	Too arid, excess sodium, erodes easily.
67: Timpie	Slight	Severe: piping, excess salt.	Severe: no water.	Deep to water	Droughty, erodes easily.	Erodes easily	Too arid, excess salt, erodes easily.
68: Timpie	Slight	Severe: piping, excess salt.	Severe: no water.	Deep to water	Droughty, erodes easily.	Erodes easily	Too arid, excess salt, erodes easily.
Tooele	Severe: seepage.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Droughty, soil blowing.	Erodes easily, soil blowing.	Too arid, excess salt, excess sodium.
69: Tooele	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, erodes easily.	Erodes easily, soil blowing.	Too arid, erodes easily.
70: Tooele	Severe: seepage.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Droughty, soil blowing.	Erodes easily, soil blowing.	Too arid, excess salt, excess sodium.
71, 72: Yeates Hollow	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, percs slowly.	Large stones, slope, droughty.
73: Yenrab	Severe: seepage, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Too arid, slope, excess sodium.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
74:							
Yenrab----------	Severe: seepage, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Too arid, slope, excess sodium.
Badlands.							
75:							
Yenrab----------	Severe: seepage, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Slope, too sandy, soil blowing.	Too arid, slope, excess sodium.
Tooele-----------	Severe: seepage.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Droughty, soil blowing.	Erodes easily, soil blowing.	Too arid, excess salt, excess sodium.

TABLE 14.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
1----------------- Abela	0-10	Gravelly loam	GM-GC, GM, SC-SM, SM	A-4	0	0-10	60-80	55-75	45-65	35-50	20-30	NP-10
	10-20	Gravelly loam	GM-GC, GM, SC-SM, SM	A-4	0	0-10	60-80	55-75	45-65	35-50	20-30	NP-10
	20-60	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	0-15	45-60	40-55	35-50	25-40	20-30	NP-10
2----------------- Abela	0-11	Very gravelly loam.	GM-GC, GM, GC	A-2, A-4	0	0-15	45-60	40-55	35-50	25-40	20-30	NP-10
	11-22	Very gravelly loam.	GM-GC, GM, GC	A-2, A-4	0	0-15	45-60	40-55	35-50	25-40	20-30	NP-10
	22-60	Extremely gravelly sandy loam.	GM-GC, GM, GP-GM	A-2, A-1	0	0-20	20-35	15-30	10-20	5-15	20-30	NP-10
3:												
Amtoft-----------	0-11	Very cobbly loam.	GM-GC, GC	A-2, A-4	0-5	25-45	45-60	40-55	30-50	25-40	20-30	5-10
	11-17	Extremely cobbly loam.	GM-GC, GP-GC, GC	A-2	0-5	30-60	25-40	20-35	15-30	10-25	20-30	5-10
	17-27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												
4:												
Amtoft-----------	0-9	Very cobbly loam.	GM-GC, GC	A-2, A-4	0-5	25-45	45-60	40-55	30-50	25-40	20-30	5-10
	9-16	Extremely cobbly loam.	GM-GC, GP-GC, GC	A-2	0-5	30-60	25-40	20-35	15-30	10-25	20-30	5-10
	16-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												
5:												
Berent-----------	0-6	Loamy fine sand	SM	A-2, A-4	0	0	100	100	75-90	30-45	0-20	NP-5
	6-60	Fine sand------	SM	A-2	0	0	100	100	65-80	20-35	0-10	NP
Hiko Peak--------	0-4	Gravelly loam	GM-GC, GM, SC-SM, SM	A-2, A-4	0	0-10	60-80	55-75	40-65	30-50	20-30	NP-10
	4-12	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	5-20	40-60	35-55	25-50	20-40	20-30	NP-10
	12-60	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	5-20	40-60	35-55	25-50	20-40	20-30	NP-10

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
6----------------	0-10	Loam-----------	CL-ML	A-4	0	0	100	90-100	85-95	60-75	25-35	5-10
Birdow	10-28	Loam-----------	CL-ML	A-4	0	0	100	90-100	85-95	60-75	25-35	5-10
	28-60	Loam-----------	CL-ML	A-4	0	0	100	90-100	85-95	60-75	25-35	5-10
7---------------- Borvant	0-7	Gravelly loam	GM-GC, GM, SC-SM, SM	A-2, A-4	0	0-10	60-80	55-75	45-65	30-50	20-30	NP-10
	7-18	Very gravelly loam.	GM-GC, GM	A-1, A-2, A-4	0	0-20	35-55	30-50	25-45	20-40	20-30	NP-10
	18-25	Indurated------	---	---	---	---	---	---	---	---	0-14	NP
	25-60	Stratified sand and gravel to indurated.	GP	A-1	0-10	15-45	25-45	20-40	10-30	0-10	20-25	NP-5
8----------------	0-6	Silt loam------	CL, CL-ML	A-4, A-6	0	0	100	100	90-100	70-90	20-35	5-15
Bramwell	6-20	Silt loam------	CL, CL-ML	A-6, A-4	0	0	100	100	90-100	70-90	20-45	5-20
	20-28	Silty clay loam	CL, CL-ML	A-6	0	0	100	100	95-100	75-95	30-40	10-20
	28-36	Silty clay loam	CL, CL-ML	A-6	0	0	100	100	95-100	75-95	30-40	10-20
	36-60	Silty clay loam	CL, CL-ML	A-6	0	0	100	100	95-100	75-95	30-40	10-20
10:												
Broad-----------	0-4	Gravelly loam	GM-GC, SC-SM, GC	A-4	0-5	0-10	55-80	50-75	40-65	30-50	20-30	5-10
	4-10	Gravelly loam	GM-GC, SC-SM, GC	A-4	0-5	0-10	55-80	50-75	40-65	30-50	20-30	5-10
	10-20	Very gravelly clay loam.	GC	A-6	0-5	0-20	35-65	30-60	25-55	20-50	30-40	10-15
	20-38	Extremely cobbly loam.	GM-GC, SC-SM, GC	A-4	0-10	30-35	40-75	35-70	30-65	25-50	20-30	5-10
	38-42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Reywat----------	0-4	Very gravelly loam.	GM-GC	A-2	0-5	0-15	35-55	30-50	25-45	20-35	20-30	5-10
	4-13	Very gravelly clay loam, very cobbly clay loam.	GC, CL, SC	A-2, A-6	0-10	0-45	35-75	30-70	25-60	20-55	30-40	10-15
	13-23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
11:												
Checkett--------	0-3	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-10	15-45	45-75	40-70	35-60	25-40	25-30	5-10
	3-14	Very cobbly clay loam, very cobbly loam.	GM-GC, SC-SM, GC, SC	A-2, A-4, A-6	0-15	10-45	45-75	40-70	35-65	25-50	25-35	5-15
	14-24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												
12--------------- Cliffdown	0-5	Gravelly sandy loam.	GM, GM-GC, SM, SC-SM	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	15-25	NP-10
	5-60	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	0-15	35-55	30-50	25-35	15-20	15-25	NP-10
13--------------- Cristo	0-9	Loam-----------	CL-ML	A-4	0	0	90-100	85-100	70-95	55-75	25-35	5-10
	9-22	Gravelly clay loam.	CL, GC, SC	A-7	0	0	55-80	50-75	45-70	35-55	40-45	15-20
	22-35	Extremely gravelly clay loam.	GC, GP-GC	A-2	0	0	15-35	10-25	5-25	5-20	30-45	10-20
	35-45	Weathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
14:												
Dateman---------	0-11	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	11-22	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	22-36	Very cobbly loam.	GM-GC, GC	A-2, A-4	0	25-45	45-70	40-65	35-55	25-45	25-30	5-10
	36-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
Podmor----------	0-3	Very cobbly loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-6	0-10	20-55	55-75	50-70	40-65	30-50	25-35	5-15
	3-16	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	0-20	35-65	30-55	25-50	20-40	25-35	5-15
	16-23	Very cobbly loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-6	0-10	20-55	55-75	50-70	40-65	30-50	25-35	5-15
	23-43	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
14A:												
Dateman----------	0-11	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	11-22	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	22-36	Very cobbly loam.	GM-GC, GC	A-2, A-4	0	25-45	45-70	40-65	35-55	25-45	25-30	5-10
	36-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
Podmor-----------	0-3	Very cobbly loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-6	0-10	20-55	55-75	50-70	40-65	30-50	25-35	5-15
	3-16	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	0-20	35-65	30-55	25-50	20-40	25-35	5-15
	16-23	Very cobbly loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-6	0-10	20-55	55-75	50-70	40-65	30-50	25-35	5-15
	23-33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												
15---------------- Doyce	0-10	Loam------------	CL, CL-ML	A-4	0	0	85-100	80-95	65-85	50-70	25-30	5-10
	10-21	Clay loam------	CL	A-6	0	0	85-100	80-95	70-90	55-70	30-40	10-15
	21-60	Loam------------	CL, CL-ML	A-4	0	0	85-100	80-95	65-85	50-70	25-30	5-10
16. Dune land												
17---------------- Dynal	0-1	Sand------------	SP-SM, SM	A-3, A-2	0	0	100	95-100	70-80	5-15	---	NP
	1-60	Sand, fine sand	SM, SP-SM	A-3, A-2	0	0	100	95-100	50-75	5-15	---	NP
18:												
Dynal------------	0-6	Sand------------	SP-SM, SM	A-3, A-2	0	0	100	95-100	70-80	5-15	---	NP
	6-60	Sand, fine sand	SM, SP-SM	A-3, A-2	0	0	100	95-100	50-75	5-15	---	NP
Tooele-----------	0-10	Fine sandy loam	SM, ML	A-4	0	0	95-100	90-100	65-85	35-55	20-25	NP-5
	10-60	Fine sandy loam	SM, ML	A-4	0	0	95-100	90-100	65-85	35-55	20-25	NP-5
19---------------- Erda	0-8	Silt loam------	CL-ML, CL	A-4	0	0	100	100	90-100	80-90	25-30	5-10
	8-14	Silt loam------	CL-ML, CL	A-4	0	0	100	100	90-100	80-90	25-30	5-10
	14-39	Silt loam------	CL-ML, CL	A-4	0	0	100	100	90-100	80-90	25-30	5-10
	39-60	Silt loam------	CL-ML, CL	A-4	0	0	100	100	90-100	80-90	25-30	5-10

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
20:												
Flygare----------	0-22	Cobbly loam----	SC-SM, CL-ML	A-4	0-5	10-30	75-95	70-90	60-80	40-60	25-30	5-10
	22-36	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-15	10-45	50-70	45-65	35-55	25-45	25-30	5-10
	36-50	Very cobbly sandy clay loam.	GC, SC	A-2	0-15	10-45	50-70	45-65	35-55	15-35	30-40	10-15
	50-60	Extremely cobbly loam.	GM-GC, GP-GM	A-2	0-20	15-55	25-45	20-40	15-35	10-30	25-35	5-10
Dateman----------	0-11	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	11-22	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	22-36	Very cobbly loam.	GM-GC, GC	A-2, A-4	0	25-45	45-70	40-65	35-55	25-45	25-30	5-10
	36-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
Rock outcrop.												
21---------------- Hiko Peak	0-4	Gravelly loam	GM-GC, GM, SC-SM, SM	A-2, A-4	0	0-10	60-80	55-75	40-65	30-50	20-30	NP-10
	4-12	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	5-20	40-60	35-55	25-50	20-40	20-30	NP-10
	12-60	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	5-20	40-60	35-55	25-50	20-40	20-30	NP-10
22---------------- Hiko Peak	0-4	Very stony loam	GM-GC, GM, SC-SM, SM	A-2, A-4	10-20	10-20	45-75	40-70	35-65	25-45	20-30	NP-10
	4-12	Very stony loam	GM-GC, GM, SC-SM, SM	A-2, A-4	10-20	10-20	45-75	40-70	35-65	25-45	20-30	NP-10
	12-60	Extremely gravelly sandy loam.	GM-GC, GM, GP-GM, GC	A-2	10-20	10-20	20-35	15-30	10-20	5-15	20-30	NP-10
23:												
Hiko Peak--------	0-4	Gravelly loam	GM-GC, GM, SC-SM, SM	A-2, A-4	0	0-10	60-80	55-75	40-65	30-50	20-30	NP-10
	4-12	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	5-20	40-60	35-55	25-50	20-40	20-30	NP-10
	12-60	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	5-20	40-60	35-55	25-50	20-40	20-30	NP-10

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
23:												
Checkett--------	0-3	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-10	15-45	45-75	40-70	35-60	25-40	25-30	5-10
	3-14	Very cobbly clay loam, very cobbly loam.	GM-GC, SC-SM, GC, SC	A-2, A-4, A-6	0-15	10-45	45-75	40-70	35-65	25-50	25-35	5-15
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
24:												
Hiko Peak-------	0-4	Gravelly loam	GM-GC, GM, SC-SM, SM	A-2, A-4	0	0-10	60-80	55-75	40-65	30-50	20-30	NP-10
	4-12	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	5-20	40-60	35-55	25-50	20-40	20-30	NP-10
	12-60	Very gravelly loam.	GM-GC, GM	A-2, A-4	0	5-20	40-60	35-55	25-50	20-40	20-30	NP-10
Taylorsflat-----	0-4	Loam-----------	CL-ML	A-4	0	0	85-100	80-100	65-95	50-75	25-35	5-10
	4-9	Loam-----------	CL-ML	A-4	0	0	85-100	80-100	65-95	50-75	25-35	5-10
	9-60	Loam-----------	CL-ML	A-4	0	0	85-100	80-100	65-95	50-75	25-35	5-10
25--------------- Hiko Springs	0-4	Gravelly sandy loam.	SM, GM	A-1, A-2	0	0	55-80	50-75	30-50	15-30	20-25	NP-5
	4-18	Gravelly sandy loam.	SM, GM	A-1, A-2	0	0	55-80	50-75	30-50	15-30	20-25	NP-5
	18-60	Gravelly sandy loam.	SM, GM	A-1, A-2	0	0	55-80	50-75	30-50	15-30	20-25	NP-5
26--------------- Holmes	0-10	Very stony sandy loam.	GM-GC, SC-SM	A-2	15-30	15-25	45-75	40-70	25-45	10-25	20-30	5-10
	10-29	Very stony sandy clay loam.	GC, SC	A-2	15-30	15-25	45-75	40-70	30-60	15-35	30-40	10-15
	29-37	Very stony sandy loam.	GM-GC, SC-SM	A-2	15-25	15-25	45-75	40-70	25-45	10-25	20-30	5-10
	37-60	Extremely stony loamy coarse sand.	GP, GP-GM	A-1	15-30	15-30	25-45	20-45	10-30	0-10	0-10	NP

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
27:												
Izamatch--------	0-3	Gravelly sandy loam.	GM, SM	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	15-25	NP-5
	3-10	Gravelly sandy loam, very gravelly sandy loam.	GM, SM	A-1, A-2	0	0-5	40-80	35-75	25-50	20-35	15-25	NP-5
	10-30	Very gravelly loamy sand, very gravelly sand, very gravelly loamy coarse sand.	GM, GP-GM	A-1	0	0-5	30-55	25-50	15-30	5-15	---	NP
	30-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP, GP-GM, GM, SP-SM	A-1	0	0-5	20-60	15-55	5-35	0-15	---	NP
Cliffdown-------	0-3	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	0-5	35-55	30-50	15-35	10-20	15-25	NP-10
	3-60	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	0-5	35-55	30-50	15-35	10-20	15-25	NP-10
28:												
Izamatch--------	0-5	Very gravelly sandy loam.	GM, GP-GM	A-1	0	0-5	30-55	25-50	15-35	5-20	15-25	NP-5
	5-10	Gravelly sandy loam, very gravelly sandy loam.	GM, SM	A-1, A-2	0	0-5	40-80	35-75	25-50	20-35	15-25	NP-5
	10-24	Very gravelly loamy sand, very gravelly sand, very gravelly loamy coarse sand.	GM, GP-GM	A-1	0	0-5	30-55	25-50	15-30	5-15	---	NP
	24-60	Stratified very gravelly loamy sand to extremely gravelly coarse sand.	GP, GP-GM, GM, SP-SM	A-1	0	0-5	20-60	15-55	5-35	0-15	---	NP
Cliffdown-------	0-5	Gravelly sandy loam.	GM, GM-GC, SM, SC-SM	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	15-25	NP-10
	5-60	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	0-15	35-55	30-50	25-35	15-20	15-25	NP-10

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
29---------------- Jericho	0-3	Gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-2, A-1	0	0-10	60-80	50-75	30-50	15-30	20-30	NP-10
	3-9	Gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-2, A-1	0	0-10	60-80	50-75	30-50	15-30	20-30	NP-10
	9-14	Very gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-2, A-1	0	0-20	35-60	30-55	15-35	10-20	20-30	NP-10
	14-19	Indurated-------	---	---	---	---	---	---	---	---	0-14	NP
	19-33	Extremely gravelly loamy coarse sand.	GP	A-1	0	0-20	20-30	15-25	10-20	0-10	20-25	NP-5
	33-60	Stratified indurated to sand and gravel.	---	---	---	---	---	---	---	---	0-14	NP
30---------------- Junkett	0-5	Gravelly loam	GM, GM-GC, SC-SM, SM	A-2, A-4	0	0-5	60-80	55-75	40-65	30-50	20-30	NP-10
	5-11	Gravelly clay loam.	SC, CL, GC	A-6	0	0-5	60-80	55-75	45-70	35-55	30-40	10-15
	11-16	Gravelly clay loam.	SC, CL, GC	A-6	0	0-5	60-80	55-75	45-70	35-55	30-40	10-15
	16-24	Gravelly loam	GM-GC, GM, SM, SC-SM	A-2, A-4	0	0-5	60-80	55-75	40-65	30-50	20-30	NP-10
	24-30	Indurated-------	---	---	---	---	---	---	---	---	0-14	NP
	30-60	Stratified sand and gravel to indurated.	GP	A-1	0-10	15-45	25-45	20-40	10-30	0-10	20-25	NP-5
31---------------- Kanosh	0-4	Loam------------	ML, CL-ML	A-4	0	0	100	100	80-90	60-75	20-30	NP-10
	4-8	Loam------------	ML, CL-ML	A-4	0	0	100	100	80-90	60-75	20-30	NP-10
	8-27	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4	0	0	100	95-100	70-85	40-60	20-30	NP-10
	27-60	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4	0	0	100	95-100	70-85	40-60	20-30	NP-10
32:												
Kanosh-----------	0-4	Loam------------	ML, CL-ML	A-4	0	0	100	100	80-90	60-75	20-30	NP-10
	4-8	Loam------------	ML, CL-ML	A-4	0	0	100	100	80-90	60-75	20-30	NP-10
	8-27	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4	0	0	100	95-100	70-85	40-60	20-30	NP-10
	27-60	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-4	0	0	100	95-100	70-85	40-60	20-30	NP-10

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
32:												
Saltair----------	0-8	Silt loam-------	CL, CL-ML	A-4	0	0	100	100	95-100	75-90	20-30	5-10
	8-21	Silt loam-------	CL-ML, CL	A-4	0	0	100	100	95-100	75-90	20-30	5-10
	21-60	Silty clay loam	CL	A-6	0	0	100	100	95-100	75-95	30-40	10-20
Logan------------	0-4	Silt loam-------	CL-ML	A-4	0	0	100	100	90-100	70-90	25-35	5-10
	4-15	Silt loam-------	CL-ML	A-4	0	0	100	100	90-100	70-90	25-35	5-10
	15-60	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
33--------------- Kapod	0-11	Gravelly loam	SC-SM, GM-GC	A-4	0	5-10	70-80	65-75	55-65	40-50	25-35	5-10
	11-30	Very cobbly clay loam.	GC, SC, CL	A-6	0	30-40	55-75	50-70	45-65	35-55	30-40	10-15
	30-60	Very cobbly sandy clay loam.	GM-GC, SC-SM	A-2, A-4	0	30-40	55-75	50-70	40-60	20-40	25-35	5-10
34--------------- Kapod	0-12	Stony loam------	GM-GC, CL-ML	A-4	5-15	0-25	70-90	65-85	55-75	40-60	25-35	5-10
	12-26	Very cobbly sandy clay loam.	GM, GC, SM, SC	A-2, A-6, A-7	0-15	5-45	45-65	40-60	30-55	15-40	35-45	10-20
	26-60	Very cobbly sandy loam.	GM, SM	A-2, A-1	0-15	5-45	45-65	40-60	25-40	10-35	20-25	NP-5
35--------------- Kapod	0-11	Very cobbly loam.	GM-GC	A-2, A-4	0	30-45	45-65	40-60	35-55	25-45	25-35	5-10
	11-25	Very cobbly sandy clay loam.	GM, GC, SM, SC	A-2, A-6, A-7	0-15	5-45	45-65	40-60	30-55	15-40	35-45	10-20
	25-60	Very cobbly sandy loam.	GM, SM	A-2, A-1	0-15	5-45	45-65	40-60	25-40	10-35	20-25	NP-5
36--------------- Kilburn	0-10	Gravelly sandy loam.	SM, GM	A-1	0	0-5	55-80	50-75	30-50	15-25	15-25	NP-5
	10-19	Gravelly sandy loam.	SM, GM	A-1	0	0-5	55-80	50-75	30-50	15-25	15-25	NP-5
	19-36	Very gravelly sandy loam.	GM, GP-GM	A-1	0	5-10	35-55	30-50	15-30	10-20	20-25	NP-5
	36-60	Very cobbly loamy sand, very gravelly loamy sand.	GM, GP-GM	A-1	0	5-30	35-55	30-50	15-30	5-15	0-10	NP
37--------------- Lakewin	0-7	Gravelly loam	GM-GC, GM, SC-SM, SM	A-4	0	0-10	60-80	55-75	45-65	35-50	20-30	NP-10
	7-18	Gravelly sandy clay loam.	GM-GC, SC-SM	A-2, A-4	0	0-10	60-80	55-75	45-65	20-40	25-35	5-10
	18-30	Very gravelly sandy loam.	GM	A-1	0	0-10	35-55	30-50	15-35	10-20	20-25	NP-5
	30-60	Very gravelly sand.	GP, SP	A-1	0	0-10	35-55	30-50	15-35	0-5	0-10	NP

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
38:												
Lodar	0-8	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-10	15-40	45-75	40-70	25-65	20-50	20-30	5-10
	8-16	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-10	15-40	45-75	40-70	25-65	20-50	20-30	5-10
	16-26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Lundy	0-11	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-15	10-40	45-75	40-70	25-65	20-50	20-30	5-10
	11-18	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-15	10-40	45-75	40-70	25-65	20-50	20-30	5-10
	18-28	Unweathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
Rock outcrop.												
39 Logan	0-4	Silt loam	CL-ML	A-4	0	0	100	100	90-100	70-90	25-35	5-10
	4-15	Silt loam	CL-ML	A-4	0	0	100	100	90-100	70-90	25-35	5-10
	15-60	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	30-40	10-20
40:												
Lundy	0-11	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-15	10-40	45-75	40-70	25-65	20-50	20-30	5-10
	11-18	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-15	10-40	45-75	40-70	25-65	20-50	20-30	5-10
	18-28	Unweathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
Dateman	0-11	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	11-22	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	22-36	Very cobbly loam.	GM-GC, GC	A-2, A-4	0	25-45	45-70	40-65	35-55	25-45	25-30	5-10
	36-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
Rock outcrop.												
41 Manassa	0-12	Silt loam	CL-ML	A-4	0	0	100	100	95-100	75-90	20-30	5-10
	12-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-90	25-40	5-15
42 Medburn	0-4	Fine sandy loam	SM, SC-SM	A-2, A-4	0	0	85-100	80-100	55-85	30-50	20-30	NP-10
	4-41	Fine sandy loam	SM, SC-SM	A-2, A-4	0	0	85-100	80-100	55-85	30-50	20-30	NP-10
	41-60	Fine sandy loam	SM, SC-SM	A-4, A-2	0	0	85-100	80-100	55-85	30-50	20-30	NP-10

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
43---------------- Medburn	0-8	Fine sandy loam	SC-SM, SM	A-4, A-2	0	0	85-100	80-100	55-85	30-50	20-30	NP-10
	8-46	Fine sandy loam	SC-SM, SM	A-4, A-2	0	0	85-100	80-100	55-85	30-50	20-30	NP-10
	46-60	Fine sandy loam	SC-SM, SM	A-4, A-2	0	0	85-100	80-100	55-85	30-50	20-30	NP-10
44. Pits												
45. Playas												
46: Playas.												
Saltair----------	0-8	Silt loam-------	CL, CL-ML	A-4	0	0	100	100	95-100	75-90	20-30	5-10
	8-21	Silt loam-------	CL-ML, CL	A-4	0	0	100	100	95-100	75-90	20-30	5-10
	21-60	Silty clay loam	CL	A-6	0	0	100	100	95-100	75-95	30-40	10-20
46A: Podmor-----------	0-3	Very cobbly loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-6	0-10	20-55	55-75	50-70	40-65	30-50	25-35	5-15
	3-16	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	0-20	35-65	30-55	25-50	20-40	25-35	5-15
	16-23	Very cobbly loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-6	0-10	20-55	55-75	50-70	40-65	30-50	25-35	5-15
	23-33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Dateman----------	0-11	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	11-22	Gravelly loam	GM-GC, SC-SM, CL-ML	A-4	0	0-10	60-80	55-75	50-70	35-55	25-30	5-10
	22-36	Very cobbly loam.	GM-GC, GC	A-2, A-4	0	25-45	45-70	40-65	35-55	25-45	25-30	5-10
	36-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
Rock outcrop.												
47: Podmor-----------	0-3	Very cobbly loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-6	0-10	20-55	55-75	50-70	40-65	30-50	25-35	5-15
	3-16	Very gravelly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	0-20	35-65	30-55	25-50	20-40	25-35	5-15
	16-23	Very cobbly loam.	GM-GC, GC, SC-SM, SC	A-2, A-4, A-6	0-10	20-55	55-75	50-70	40-65	30-50	25-35	5-15
	23-33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
47:												
Onaqui----------	0-4	Very cobbly loam.	GM-GC, GC	A-2, A-4, A-6	0-10	15-55	45-70	40-65	35-55	25-45	25-35	5-15
	4-15	Extremely cobbly loam.	GM-GC, GC	A-2	0-10	25-60	25-45	20-40	15-40	10-30	25-35	5-15
	15-25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												
48:												
Reywat----------	0-2	Very cobbly loam.	GM-GC	A-2, A-4	0-10	15-45	45-75	40-70	35-60	25-50	20-30	5-10
	2-11	Very gravelly clay loam, very cobbly clay loam.	GC, CL, SC	A-2, A-6	0-10	0-45	35-75	30-70	25-60	20-55	30-40	10-15
	11-21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Broad-----------	0-4	Cobbly loam----	GM-GC, CL-ML	A-4	0-5	10-30	80-90	75-85	60-70	50-60	20-30	5-10
	4-14	Cobbly loam----	GM-GC, CL-ML	A-4	0-5	10-30	80-90	75-85	60-70	50-60	20-30	5-10
	14-23	Very gravelly clay loam.	GC	A-6	0-5	0-20	35-65	30-60	25-55	20-50	30-40	10-15
	23-36	Very cobbly loam.	GM-GC, CL-ML	A-6	0-10	25-45	55-85	50-80	40-70	30-60	20-30	5-10
	36-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												
49:												
Ridd------------	0-13	Very stony sandy loam.	SM, GM, SC-SM, GM-GC	A-1, A-2	10-25	10-25	40-70	35-65	15-40	10-25	20-30	NP-10
	13-22	Very stony sandy loam.	SM, GM, SC-SM, GM-GC	A-1, A-2	10-25	10-25	40-70	35-65	15-40	10-25	20-30	NP-10
	22-36	Very stony sandy loam.	GM, SM, SC-SM, GM-GC	A-1, A-2	10-25	10-25	40-70	35-65	15-40	10-25	20-30	NP-10
	36-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
50:												
Ridd------------	0-13	Very stony sandy loam.	SM, GM, SC-SM, GM-GC	A-1, A-2	10-25	10-25	40-70	35-65	15-40	10-25	20-30	NP-10
	13-22	Very stony sandy loam.	SM, GM, SC-SM, GM-GC	A-1, A-2	10-25	10-25	40-70	35-65	15-40	10-25	20-30	NP-10
	22-36	Very stony sandy loam.	GM, SM, SC-SM, GM-GC	A-1, A-2	10-25	10-25	40-70	35-65	15-40	10-25	20-30	NP-10
	36-46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Wasatch---------	0-18	Loamy coarse sand.	SM	A-1, A-2	0	0	85-100	80-100	40-75	15-30	0-10	NP
	18-60	Loamy coarse sand, sand.	SM, SP-SM	A-1	0	0	85-100	80-100	40-75	5-30	0-10	NP
Rock outcrop.												
51:												
Rock outcrop.												
Lundy-----------	0-11	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-15	10-40	45-75	40-70	25-65	20-50	20-30	5-10
	11-18	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-15	10-40	45-75	40-70	25-65	20-50	20-30	5-10
	18-28	Unweathered bedrock.	---	---	---	---	---	---	---	---	0-14	NP
52.												
Salt flats												
53:												
Saltair---------	0-8	Silt loam------	CL, CL-ML	A-4	0	0	100	100	95-100	75-90	20-30	5-10
	8-21	Silt loam------	CL-ML, CL	A-4	0	0	100	100	95-100	75-90	20-30	5-10
	21-60	Silty clay loam	CL	A-6	0	0	100	100	95-100	75-95	30-40	10-20
Playas.												

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
54----------------- Scalade	0-3	Very fine sandy loam.	ML	A-4	0	0-5	95-100	95-100	80-95	50-65	---	NP
	3-9	Very fine sandy loam.	ML	A-4	0	0-5	95-100	95-100	80-95	50-65	---	NP
	9-17	Very fine sandy loam.	ML	A-4	0	0-5	95-100	95-100	80-95	50-65	---	NP
	17-24	Cemented--------	---	---	---	---	---	---	---	---	---	NP
	24-42	Gravelly sandy loam, gravelly loam, very gravelly loamy sand.	GM, GP-GM, SM	A-1, A-2, A-4	0	0-5	35-75	30-70	15-60	5-45	---	NP
	42-60	Stratified indurated to sand and gravel.	---	---	---	---	---	---	---	---	---	NP
55: Scalade----------	0-3	Very fine sandy loam.	ML	A-4	0	0-5	95-100	95-100	80-95	50-65	---	NP
	3-9	Very fine sandy loam.	ML	A-4	0	0-5	95-100	95-100	80-95	50-65	---	NP
	9-17	Very fine sandy loam.	ML	A-4	0	0-5	95-100	95-100	80-95	50-65	---	NP
	17-24	Cemented--------	---	---	---	---	---	---	---	---	---	NP
	24-42	Gravelly sandy loam, gravelly loam, very gravelly loamy sand.	GM, GP-GM, SM	A-1, A-2, A-4	0	0-5	35-75	30-70	15-60	5-45	---	NP
	42-60	Stratified indurated to sand and gravel.	---	---	---	---	---	---	---	---	---	NP
Jericho----------	0-4	Gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-2, A-1	0	0-10	60-80	50-75	30-50	15-30	20-30	NP-10
	4-9	Gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-2, A-1	0	0-10	60-80	50-75	30-50	15-30	20-30	NP-10
	9-16	Very gravelly sandy loam.	GM-GC, SC-SM, GM, SM	A-2, A-1	0	0-20	35-60	30-55	15-35	10-20	20-30	NP-10
	16-20	Indurated-------	---	---	---	---	---	---	---	---	0-14	NP
	20-40	Extremely gravelly loamy coarse sand.	GP	A-1	0	0-20	20-30	15-25	10-20	0-10	20-25	NP-5
	40-60	Stratified indurated to sand and gravel.	---	---	---	---	---	---	---	---	0-14	NP

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
55:												
Medburn----------	0-4	Fine sandy loam	SM, SC-SM	A-2, A-4	0	0	85-100	80-100	55-85	30-50	20-30	NP-10
	4-41	Fine sandy loam	SM, SC-SM	A-2, A-4	0	0	85-100	80-100	55-85	30-50	20-30	NP-10
	41-60	Fine sandy loam	SM, SC-SM	A-4, A-2	0	0	85-100	80-100	55-85	30-50	20-30	NP-10
56----------------	0-5	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	75-90	25-35	5-15
Skumpah	5-14	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	35-40	15-20
	14-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-90	20-40	5-20
57----------------	0-2	Silt loam------	CL-ML, ML	A-4	0	0	100	100	90-100	70-90	25-35	5-10
Skumpah	2-9	Silty clay loam	ML, CL	A-6	0	0	100	100	95-100	85-95	35-40	10-15
	9-26	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-95	25-40	5-15
	26-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-95	25-40	5-15
58----------------	0-2	Silt loam------	CL-ML, ML	A-4	0	0	100	100	90-100	70-90	25-35	5-10
Skumpah	2-9	Silty clay loam	ML, CL	A-6	0	0	100	100	95-100	85-95	35-40	10-15
	9-32	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-95	25-40	5-15
	32-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-95	25-40	5-15
59----------------	0-4	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	75-90	25-35	5-15
Skumpah	4-11	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	35-40	15-20
	11-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-90	20-40	5-20
60:												
Skumpah----------	0-4	Silt loam------	CL-ML, CL	A-4, A-6	0	0	100	100	90-100	75-90	25-35	5-15
	4-11	Silty clay loam	CL	A-6	0	0	100	100	95-100	85-95	35-40	15-20
	11-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	75-90	20-40	5-20
Yenrab-----------	0-5	Loamy fine sand	SM	A-2, A-4	0	0	100	100	70-90	25-40	20-25	NP-5
	5-60	Fine sand------	SM	A-2	0	0	100	100	65-80	20-35	0-10	NP
61. Slickens and mine dumps												

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
62--------------- Spager	0-3	Gravelly loam	GM-GC	A-4	0	0-10	65-75	60-70	50-60	40-50	20-30	5-10
	3-14	Very gravelly loam, very gravelly fine sandy loam.	GM-GC	A-2, A-4	0	0-15	35-55	30-50	25-45	15-40	20-30	5-10
	14-20	Indurated------	---	---	---	---	---	---	---	---	---	NP
	20-60	Stratified sand and gravel to indurated.	GP, GP-GM	A-1	0-10	15-45	25-45	20-40	10-30	0-10	20-25	NP-5
63--------------- Springmeyer	0-4	Gravelly sandy loam.	SM, SC-SM, GM, GM-GC	A-1, A-2	0	0-5	60-80	55-75	30-50	15-30	20-30	NP-10
	4-14	Gravelly sandy loam.	SM, SC-SM, GM, GM-GC	A-1, A-2	0	0-5	60-80	55-75	30-50	15-30	20-30	NP-10
	14-29	Gravelly sandy clay loam.	SC, GC	A-2, A-6	0	0-5	60-80	55-75	40-65	20-40	30-40	10-20
	29-42	Very gravelly sandy loam.	GM, GP-GM, GM-GC	A-1, A-2	0	0-5	35-55	30-50	15-35	10-20	20-30	NP-10
	42-60	Very gravelly loamy sand.	GM, GP-GM	A-1	0	0-5	35-55	30-50	15-30	5-15	20-25	NP-5
64--------------- Taylorsflat	0-4	Loam-----------	CL-ML	A-4	0	0	85-100	80-100	65-95	50-75	25-35	5-10
	4-9	Loam-----------	CL-ML	A-4	0	0	85-100	80-100	65-95	50-75	25-35	5-10
	9-60	Loam-----------	CL-ML	A-4	0	0	85-100	80-100	65-95	50-75	25-35	5-10
65--------------- Taylorsflat	0-3	Loam-----------	CL-ML	A-4	0	0	90-100	80-100	70-90	50-70	25-30	5-10
	3-9	Loam-----------	CL-ML	A-4	0	0	90-100	80-100	70-90	50-70	25-30	5-10
	9-60	Loam-----------	CL-ML	A-4	0	0	90-100	80-100	70-90	50-70	25-30	5-10
65A: Theriot---------	0-3	Very stony loam	GM, ML, SM	A-4	15-25	5-25	45-80	45-80	40-75	35-65	20-25	NP-5
	3-14	Very stony loam, very cobbly loam, very gravelly sandy loam.	GM, SM	A-1, A-2, A-4	0-25	10-40	40-75	35-75	25-60	15-50	20-25	NP-5
	14-18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	NP
Rock outcrop.												
66--------------- Timpie	0-5	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	65-95	25-30	5-10
	5-14	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10
	14-60	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10
67--------------- Timpie	0-3	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10
	3-21	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10
	21-60	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
68:												
Timpie----------	0-3	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10
	3-21	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10
	21-60	Silt loam------	CL-ML	A-4	0	0	100	100	95-100	80-95	25-30	5-10
Tooele----------	0-10	Fine sandy loam	SM, ML	A-4	0	0	95-100	90-100	65-85	35-55	20-25	NP-5
	10-60	Fine sandy loam	SM, ML	A-4	0	0	95-100	90-100	65-85	35-55	20-25	NP-5
69--------------- Tooele	0-3	Fine sandy loam	SM	A-4	0	0	95-100	90-100	65-85	35-50	20-25	NP-5
	3-42	Fine sandy loam	SM	A-4	0	0	95-100	90-100	65-85	35-50	20-25	NP-5
	42-60	Loamy fine sand, fine sand.	SM, SP-SM	A-2, A-1	0	0	95-100	90-100	45-75	5-30	0-10	NP
70--------------- Tooele	0-10	Fine sandy loam	SM, ML	A-4	0	0	95-100	90-100	65-85	35-55	20-25	NP-5
	10-60	Fine sandy loam	SM, ML	A-4	0	0	95-100	90-100	65-85	35-55	20-25	NP-5
71--------------- Yeates Hollow	0-12	Cobbly loam----	SC-SM, CL-ML	A-4	0-5	10-30	75-90	70-85	60-80	40-60	25-35	5-10
	12-44	Very cobbly clay loam.	GC	A-2, A-7	0-15	15-40	45-70	40-65	35-60	30-50	40-45	15-20
	44-60	Extremely cobbly sandy clay loam.	GM-GC, GP-GC, GP-GM	A-2, A-1	0-20	25-60	25-45	20-40	15-35	5-20	25-35	5-10
72--------------- Yeates Hollow	0-12	Very cobbly loam.	GM-GC, SC-SM	A-2, A-4	0-10	20-40	45-70	40-65	35-55	25-45	25-35	5-10
	12-38	Very cobbly clay loam.	GC	A-2, A-7	0-15	15-40	45-70	40-65	35-60	30-50	40-45	15-20
	38-60	Extremely cobbly sandy clay loam.	GM-GC, GP-GC, GP-GM	A-2, A-1	0-20	25-60	25-45	20-40	15-35	5-20	25-35	5-10
73--------------- Yenrab	0-15	Fine sand------	SM	A-2	0	0	100	100	65-80	20-35	0-10	NP
	15-60	Fine sand------	SM	A-2	0	0	100	100	65-80	20-35	0-10	NP
74:												
Yenrab----------	0-15	Fine sand------	SM	A-2	0	0	100	100	65-80	20-35	0-10	NP
	15-60	Fine sand------	SM	A-2	0	0	100	100	65-80	20-35	0-10	NP
Badlands.												

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
75:												
Yenrab----------	0-5	Loamy fine sand	SM	A-2, A-4	0	0	100	100	70-90	25-40	20-25	NP-5
	5-60	Fine sand------	SM	A-2	0	0	100	100	65-80	20-35	0-10	NP
Tooele-----------	0-10	Fine sandy loam	SM, ML	A-4	0	0	95-100	90-100	65-85	35-55	20-25	NP-5
	10-60	Fine sandy loam	SM, ML	A-4	0	0	95-100	90-100	65-85	35-55	20-25	NP-5

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
1----------------- Abela	0-10	10-18	1.25-1.35	2.00-6.00	0.11-0.14	Low-------	2.0-4.0	0.15	0.28	3	5	56
	10-20	10-18	1.30-1.40	2.00-6.00	0.11-0.14	Low-------	0.0-1.0	0.20	0.37			
	20-60	10-18	1.35-1.50	2.00-6.00	0.08-0.11	Low-------	0.5-1.0	0.15	0.43			
2----------------- Abela	0-11	10-18	1.25-1.35	2.00-6.00	0.08-0.11	Low-------	2.0-4.0	0.15	0.28	3	6	48
	11-22	10-18	1.30-1.40	2.00-6.00	0.08-0.11	Low-------	0.5-1.0	0.10	0.32			
	22-60	10-18	1.35-1.50	2.00-6.00	0.05-0.06	Low-------	0.5-1.0	0.05	0.28			
3: Amtoft-----------	0-11	12-18	1.30-1.45	2.00-6.00	0.08-0.11	Low-------	1.0-2.0	0.10	0.37	1	6	48
	11-17	12-20	1.30-1.45	2.00-6.00	0.05-0.07	Low-------	0.0-1.0	0.05	0.32			
	17-27	---	---	0.00-0.60	---	----------	---	---	---			
Rock outcrop.												
4: Amtoft-----------	0-9	12-18	1.30-1.45	2.00-6.00	0.08-0.11	Low-------	1.0-2.0	0.10	0.37	1	6	48
	9-16	12-20	1.30-1.45	2.00-6.00	0.05-0.07	Low-------	0.0-1.0	0.05	0.32			
	16-26	---	---	0.00-0.60	---	----------	---	---	---			
Rock outcrop.												
5: Berent-----------	0-6	0-10	1.45-1.60	6.00-20.00	0.07-0.09	Low-------	1.0-2.0	0.17	0.17	5	2	134
	6-60	0-5	1.50-1.65	20.00-60.00	0.06-0.07	Low-------	0.5-1.0	0.17	0.17			
Hiko Peak--------	0-4	10-18	1.30-1.40	2.00-6.00	0.11-0.14	Low-------	1.0-2.0	0.20	0.37	5	5	56
	4-12	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.0-1.0	0.10	0.32			
	12-60	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.0-1.0	0.10	0.32			
6----------------- Birdow	0-10	18-27	1.25-1.35	0.60-2.00	0.15-0.17	Low-------	2.0-4.0	0.24	0.24	5	4L	86
	10-28	18-27	1.25-1.35	0.60-2.00	0.15-0.17	Low-------	2.0-4.0	0.24	0.24			
	28-60	18-27	1.30-1.40	0.60-2.00	0.15-0.17	Low-------	1.0-2.0	0.32	0.32			
7----------------- Borvant	0-7	10-18	1.25-1.35	0.60-2.00	0.11-0.14	Low-------	2.0-4.0	0.15	0.28	1	5	56
	7-18	10-18	1.35-1.45	0.60-2.00	0.08-0.10	Low-------	0.5-1.0	0.10	0.37			
	18-25	---	---	0.00-0.60	---	----------	---	---	---			
	25-60	0-10	1.30-1.50	0.60-20.00	0.01-0.03	Low-------	---	0.02	0.10			
8----------------- Bramwell	0-6	18-25	1.10-1.20	0.06-0.60	0.11-0.17	Low-------	2.0-5.0	0.43	0.43	5	4L	86
	6-20	24-27	1.15-1.30	0.06-0.60	0.11-0.17	Low-------	0.0-0.5	0.49	0.49			
	20-28	27-35	1.20-1.30	0.06-0.20	0.11-0.15	Moderate	0.0-0.5	0.43	0.43			
	28-36	27-35	1.20-1.30	0.06-0.20	0.11-0.15	Moderate	0.0-0.5	0.43	0.43			
	36-60	27-35	1.20-1.30	0.06-0.20	0.11-0.15	Moderate	0.0-0.5	0.43	0.43			
10: Broad------------	0-4	15-20	1.20-1.35	0.60-2.00	0.11-0.14	Low-------	3.0-5.0	0.10	0.20	2	6	48
	4-10	15-20	1.25-1.40	0.60-2.00	0.11-0.14	Low-------	2.0-4.0	0.15	0.24			
	10-20	27-35	1.25-1.40	0.20-0.60	0.09-0.12	Moderate	0.5-1.0	0.10	0.32			
	20-38	15-20	1.25-1.40	0.60-2.00	0.07-0.08	Low-------	0.0-0.5	0.05	0.37			
	38-42	---	---	0.20-2.00	---	----------	---	---	---			
Reywat-----------	0-4	15-20	1.25-1.40	0.60-2.00	0.08-0.11	Low-------	2.0-4.0	0.05	0.32	1	7	38
	4-13	27-35	1.15-1.30	0.20-0.60	0.09-0.12	Low-------	0.5-1.0	0.10	0.37			
	13-23	---	---	0.01-0.60	---	----------	---	---	---			
Rock outcrop.												

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
11:												
Checkett--------	0-3	18-22	1.20-1.30	0.60-2.00	0.08-0.10	Low------	1.0-2.0	0.10	0.37	1	6	48
	3-14	22-30	1.25-1.35	0.60-2.00	0.08-0.12	Low------	0.5-1.0	0.10	0.37			
	14-24	---	---	0.01-2.00	---	---------	---	---	---			
Rock outcrop.												
12--------------- Cliffdown	0-5	10-18	1.40-1.55	2.00-6.00	0.07-0.09	Low------	0.5-1.0	0.15	0.28	5	4	86
	5-60	8-18	1.40-1.60	2.00-6.00	0.05-0.07	Low------	0.0-0.5	0.10	0.37			
13--------------- Cristo	0-9	18-27	1.25-1.40	0.60-2.00	0.15-0.17	Low------	2.0-5.0	0.20	0.20	3	6	48
	9-22	35-40	1.25-1.40	0.20-0.60	0.12-0.16	Moderate	1.0-2.0	0.15	0.24			
	22-35	27-40	1.25-1.40	0.60-2.00	0.06-0.08	Moderate	0.5-1.0	0.05	0.24			
	35-45	---	---	0.00-2.00	---	---------	---	---	---			
14:												
Dateman---------	0-11	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low------	3.0-6.0	0.15	0.37	2	7	38
	11-22	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low------	2.0-4.0	0.15	0.37			
	22-36	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	1.0-2.0	0.10	0.32			
	36-46	---	---	0.00-0.60	---	---------	---	---	---			
Podmor----------	0-3	18-27	1.20-1.30	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.10	0.37	2	7	38
	3-16	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.10	0.32			
	16-23	18-27	1.40-1.50	0.60-2.00	0.07-0.11	Low------	0.5-1.0	0.10	0.32			
	23-43	---	---	0.01-2.00	---	---------	---	---	---			
Rock outcrop.												
14A:												
Dateman---------	0-11	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low------	3.0-6.0	0.15	0.37	2	7	38
	11-22	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low------	2.0-4.0	0.15	0.37			
	22-36	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	1.0-2.0	0.10	0.32			
	36-46	---	---	0.00-0.60	---	---------	---	---	---			
Podmor----------	0-3	18-27	1.20-1.30	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.10	0.37	2	7	38
	3-16	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.10	0.32			
	16-23	18-27	1.40-1.50	0.60-2.00	0.07-0.11	Low------	0.5-1.0	0.10	0.32			
	23-33	---	---	0.01-2.00	---	---------	---	---	---			
Rock outcrop.												
15--------------- Doyce	0-10	18-24	1.20-1.30	0.60-2.00	0.15-0.17	Low------	2.0-4.0	0.20	0.24	5	6	48
	10-21	27-35	1.30-1.40	0.20-0.60	0.17-0.18	Moderate	0.5-1.0	0.28	0.32			
	21-60	18-27	1.30-1.40	0.60-2.00	0.15-0.17	Low------	0.5-1.0	0.32	0.37			
16. Dune land												
17--------------- Dynal	0-1	0-2	1.45-1.60	6.00-20.00	0.04-0.07	Low------	0.0-0.5	0.10	0.10	5	1	220
	1-60	0-2	1.45-1.60	6.00-20.00	0.04-0.07	Low------	0.0-0.5	0.10	0.10			
18:												
Dynal-----------	0-6	0-2	1.45-1.60	6.00-20.00	0.04-0.07	Low------	0.0-0.5	0.10	0.10	5	1	220
	6-60	0-2	1.45-1.60	6.00-20.00	0.04-0.07	Low------	0.0-0.5	0.10	0.10			
Tooele----------	0-10	5-15	1.35-1.50	2.00-6.00	0.07-0.11	Low------	0.5-1.0	0.37	0.37	5	3	86
	10-60	5-15	1.35-1.50	2.00-6.00	0.05-0.09	Low------	0.0-0.5	0.43	0.43			
19--------------- Erda	0-8	18-27	1.10-1.20	0.20-0.60	0.16-0.18	Low------	2.0-4.0	0.32	0.32	5	4L	86
	8-14	18-27	1.10-1.20	0.20-0.60	0.16-0.18	Low------	1.0-3.0	0.32	0.32			
	14-39	18-27	1.20-1.30	0.20-0.60	0.16-0.18	Low------	0.5-1.0	0.49	0.49			
	39-60	18-27	1.20-1.30	0.20-0.60	0.15-0.18	Low------	0.5-1.0	0.49	0.49			

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
20:												
Flygare----------	0-22	18-27	1.20-1.30	0.60-2.00	0.11-0.13	Low-------	5.0-10	0.10	0.17	5	7	38
	22-36	15-27	1.25-1.35	0.60-2.00	0.08-0.10	Low-------	0.5-1.0	0.10	0.37			
	36-50	27-35	1.30-1.40	0.60-2.00	0.08-0.11	Low-------	0.5-1.0	0.10	0.37			
	50-60	18-27	1.30-1.40	0.60-2.00	0.06-0.08	Low-------	0.5-1.0	0.10	0.64			
Dateman----------	0-11	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low-------	3.0-6.0	0.15	0.37	2	7	38
	11-22	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low-------	2.0-4.0	0.15	0.37			
	22-36	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low-------	1.0-2.0	0.10	0.32			
	36-46	---	---	0.00-0.60	---	---------	---	---	---			
Rock outcrop.												
21---------------- Hiko Peak	0-4	10-18	1.30-1.40	2.00-6.00	0.11-0.14	Low-------	1.0-2.0	0.20	0.37	5	5	56
	4-12	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.0-1.0	0.10	0.32			
	12-60	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.0-1.0	0.10	0.32			
22---------------- Hiko Peak	0-4	10-18	1.30-1.40	2.00-6.00	0.08-0.11	Low-------	1.0-2.0	0.10	0.37	5	6	48
	4-12	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.5-1.0	0.10	0.32			
	12-60	10-18	1.40-1.50	2.00-6.00	0.05-0.08	Low-------	0.5-1.0	0.05	0.17			
23:												
Hiko Peak--------	0-4	10-18	1.30-1.40	2.00-6.00	0.11-0.14	Low-------	1.0-2.0	0.20	0.37	5	5	56
	4-12	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.0-1.0	0.10	0.32			
	12-60	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.0-1.0	0.10	0.32			
Checkett---------	0-3	18-22	1.20-1.30	0.60-2.00	0.08-0.10	Low-------	1.0-2.0	0.10	0.37	1	6	48
	3-14	22-30	1.25-1.35	0.60-2.00	0.08-0.12	Low-------	0.5-1.0	0.10	0.37			
	14-18	---	---	0.01-2.00	---	---------	---	---	---			
24:												
Hiko Peak--------	0-4	10-18	1.30-1.40	2.00-6.00	0.11-0.14	Low-------	1.0-2.0	0.20	0.37	5	5	56
	4-12	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.0-1.0	0.10	0.32			
	12-60	10-18	1.35-1.45	2.00-6.00	0.08-0.11	Low-------	0.0-1.0	0.10	0.32			
Taylorsflat------	0-4	18-27	1.25-1.35	0.60-2.00	0.15-0.17	Low-------	1.0-2.0	0.28	0.32	5	4L	86
	4-9	18-27	1.25-1.35	0.20-0.60	0.15-0.17	Low-------	0.0-1.0	0.37	0.43			
	9-60	18-27	1.25-1.35	0.20-0.60	0.10-0.16	Low-------	0.0-1.0	0.37	0.43			
25---------------- Hiko Springs	0-4	10-18	1.35-1.50	2.00-6.00	0.08-0.09	Low-------	0.5-1.0	0.15	0.28	2	4	86
	4-18	10-18	1.40-1.55	2.00-6.00	0.08-0.09	Low-------	0.0-0.5	0.17	0.32			
	18-60	10-18	1.40-1.60	2.00-6.00	0.08-0.09	Low-------	0.0-0.5	0.17	0.32			
26---------------- Holmes	0-10	15-20	1.35-1.45	2.00-6.00	0.06-0.07	Low-------	2.0-4.0	0.05	0.24	3	5	56
	10-29	27-35	1.30-1.40	0.60-2.00	0.08-0.12	Low-------	0.0-1.0	0.10	0.28			
	29-37	15-20	1.40-1.50	2.00-6.00	0.06-0.07	Low-------	0.0-1.0	0.10	0.28			
	37-60	2-5	1.50-1.60	6.00-20.00	0.02-0.03	Low-------	0.0-1.0	0.05	0.24			
27:												
Izamatch---------	0-3	8-18	1.50-1.70	2.00-6.00	0.07-0.09	Low-------	0.0-0.5	0.15	0.28	2	4	86
	3-10	8-18	1.50-1.70	2.00-6.00	0.04-0.09	Low-------	0.0-0.5	0.10	0.24			
	10-30	0-8	1.55-1.70	6.00-20.00	0.03-0.05	Low-------	0.0-0.5	0.10	0.20			
	30-60	0-8	1.60-1.75	6.00-20.00	0.03-0.05	Low-------	0.0-0.5	0.05	0.20			
Cliffdown--------	0-3	10-18	1.40-1.55	2.00-6.00	0.06-0.07	Low-------	0.5-1.0	0.10	0.32	5	5	56
	3-60	8-18	1.40-1.60	2.00-6.00	0.03-0.06	Low-------	0.5-1.0	0.10	0.32			
28:												
Izamatch---------	0-5	8-18	1.50-1.70	2.00-6.00	0.04-0.08	Low-------	0.0-0.5	0.10	0.37	2	5	56
	5-10	8-18	1.50-1.70	2.00-6.00	0.04-0.09	Low-------	0.0-0.5	0.10	0.24			
	10-24	0-8	1.55-1.70	6.00-20.00	0.03-0.05	Low-------	0.0-0.5	0.10	0.20			
	24-60	0-8	1.60-1.75	6.00-20.00	0.03-0.05	Low-------	0.0-0.5	0.05	0.20			

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
28:												
Cliffdown--------	0-5	10-18	1.40-1.55	2.00-6.00	0.07-0.09	Low-------	0.5-1.0	0.15	0.28	5	4	86
	5-60	8-18	1.40-1.60	2.00-6.00	0.05-0.07	Low-------	0.0-0.5	0.10	0.37			
29---------------- Jericho	0-3	10-18	1.30-1.50	2.00-6.00	0.08-0.09	Low-------	1.0-2.0	0.15	0.24	1	4	86
	3-9	10-18	1.30-1.50	2.00-6.00	0.08-0.09	Low-------	0.0-1.0	0.17	0.17			
	9-14	10-18	1.30-1.50	2.00-6.00	0.06-0.07	Low-------	0.0-1.0	0.10	0.17			
	14-19	---	---	0.00-0.20	---	----------	---	---	---			
	19-33	0-10	1.30-1.50	6.00-20.00	0.01-0.03	Low-------	0.0-0.5	0.02	0.17			
	33-60	---	---	0.00-0.20	---	----------	0.0-0.5	---	---			
30---------------- Junkett	0-5	10-18	1.25-1.45	0.60-2.00	0.12-0.13	Low-------	1.0-2.0	0.17	0.37	2	6	48
	5-11	27-35	1.25-1.45	0.20-0.60	0.13-0.15	Moderate	0.5-1.0	0.20	0.24			
	11-16	27-35	1.25-1.45	0.20-0.60	0.13-0.15	Moderate	0.5-1.0	0.20	0.24			
	16-24	10-18	1.25-1.45	0.60-2.00	0.11-0.13	Low-------	0.5-1.0	0.24	0.32			
	24-30	---	---	0.00-0.20	---	----------	0.0-0.5	---	---			
	30-60	0-10	1.30-1.50	0.60-20.00	0.01-0.03	Low-------	0.0-0.5	0.02	0.10			
31---------------- Kanosh	0-4	8-18	1.25-1.40	0.60-2.00	0.15-0.17	Low-------	1.0-2.0	0.32	0.32	5	4L	86
	4-8	8-18	1.25-1.40	0.60-2.00	0.15-0.17	Low-------	0.5-1.0	0.32	0.32			
	8-27	5-18	1.35-1.50	2.00-6.00	0.07-0.11	Low-------	0.0-0.5	0.37	0.37			
	27-60	5-18	1.35-1.50	2.00-6.00	0.07-0.11	Low-------	0.0-0.5	0.37	0.37			
32:												
Kanosh-----------	0-4	8-18	1.25-1.40	0.60-2.00	0.15-0.17	Low-------	1.0-2.0	0.32	0.32	5	4L	86
	4-8	8-18	1.25-1.40	0.60-2.00	0.15-0.17	Low-------	0.5-1.0	0.32	0.32			
	8-27	5-18	1.35-1.50	2.00-6.00	0.07-0.11	Low-------	0.0-0.5	0.37	0.37			
	27-60	5-18	1.35-1.50	2.00-6.00	0.07-0.11	Low-------	0.0-0.5	0.37	0.37			
Saltair----------	0-8	20-27	1.15-1.25	0.02-0.60	0.16-0.18	Low-------	0.0-1.0	0.49	0.49	5	4L	86
	8-21	20-27	1.15-1.25	0.20-0.60	0.16-0.18	Low-------	0.0-0.5	0.49	0.49			
	21-60	27-35	1.20-1.30	0.06-0.20	0.16-0.18	Moderate	0.0-0.5	0.49	0.49			
Logan------------	0-4	18-27	1.15-1.30	0.20-0.60	0.17-0.18	Low-------	4.0-8.0	0.28	0.28	5	4L	86
	4-15	18-27	1.15-1.30	0.20-0.60	0.17-0.18	Low-------	4.0-8.0	0.28	0.28			
	15-60	27-35	1.15-1.30	0.06-0.20	0.17-0.18	Moderate	0.0-1.0	0.43	0.43			
33---------------- Kapod	0-11	18-27	1.30-1.40	0.60-2.00	0.11-0.14	Low-------	2.0-4.0	0.15	0.28	3	7	38
	11-30	27-35	1.25-1.35	0.60-2.00	0.09-0.12	Low-------	0.5-1.0	0.10	0.32			
	30-60	20-27	1.30-1.40	0.60-2.00	0.08-0.11	Low-------	0.5-1.0	0.10	0.24			
34---------------- Kapod	0-12	20-25	1.25-1.35	0.60-2.00	0.11-0.14	Low-------	2.0-4.0	0.20	0.37	3	7	38
	12-26	25-35	1.25-1.35	0.60-2.00	0.08-0.12	Moderate	0.5-1.0	0.24	0.24			
	26-60	10-20	1.30-1.45	2.00-6.00	0.06-0.08	Low-------	0.5-1.0	0.28	0.17			
35---------------- Kapod	0-11	20-25	1.25-1.35	0.60-2.00	0.08-0.11	Low-------	2.0-4.0	0.17	0.37	3	7	38
	11-25	25-35	1.25-1.35	0.60-2.00	0.08-0.12	Moderate	0.5-1.0	0.24	0.24			
	25-60	10-20	1.30-1.45	2.00-6.00	0.06-0.08	Low-------	0.5-1.0	0.28	0.17			
36---------------- Kilburn	0-10	8-16	1.35-1.50	2.00-6.00	0.07-0.09	Low-------	2.0-4.0	0.10	0.24	3	3	86
	10-19	8-16	1.35-1.50	2.00-6.00	0.07-0.09	Low-------	2.0-4.0	0.10	0.24			
	19-36	10-18	1.35-1.50	2.00-6.00	0.06-0.08	Low-------	0.0-1.0	0.05	0.17			
	36-60	4-8	1.45-1.60	6.00-20.00	0.03-0.05	Low-------	0.0-1.0	0.05	0.15			
37---------------- Lakewin	0-7	16-22	1.25-1.35	2.00-6.00	0.11-0.14	Low-------	2.0-4.0	0.15	0.28	3	6	48
	7-18	18-25	1.30-1.40	2.00-6.00	0.12-0.15	Low-------	0.5-1.0	0.15	0.28			
	18-30	10-15	1.40-1.50	2.00-6.00	0.06-0.07	Low-------	0.0-1.0	0.10	0.32			
	30-60	0-5	1.50-1.60	20.00-60.00	0.03-0.04	Low-------	0.0-1.0	0.05	0.17			

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
38:												
Lodar-----------	0-8	18-27	1.20-1.30	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.05	0.17	1	6	48
	8-16	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	0.5-1.0	0.10	0.37			
	16-26	---	---	0.00-0.60	---	---------	---	---	---			
Lundy-----------	0-11	18-27	1.20-1.30	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.05	0.17	1	6	48
	11-18	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	0.0-1.0	0.10	0.37			
	18-28	---	---	0.00-0.60	---	---------	---	---	---			
Rock outcrop.												
39--------------- Logan	0-4	18-27	1.15-1.30	0.20-0.60	0.17-0.18	Low------	4.0-8.0	0.28	0.28	5	4L	86
	4-15	18-27	1.15-1.30	0.20-0.60	0.17-0.18	Low------	4.0-8.0	0.28	0.28			
	15-60	27-35	1.15-1.30	0.06-0.20	0.17-0.18	Moderate	0.0-1.0	0.43	0.43			
40:												
Lundy-----------	0-11	18-27	1.20-1.30	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.05	0.17	1	6	48
	11-18	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	0.0-1.0	0.10	0.37			
	18-28	---	---	0.00-0.60	---	---------	---	---	---			
Dateman---------	0-11	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low------	3.0-6.0	0.15	0.37	2	7	38
	11-22	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low------	2.0-4.0	0.15	0.37			
	22-36	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	1.0-2.0	0.10	0.32			
	36-46	---	---	0.00-0.60	---	---------	---	---	---			
Rock outcrop.												
41--------------- Manassa	0-12	18-27	1.15-1.25	0.20-0.60	0.17-0.18	Low------	1.0-2.0	0.43	0.43	2	4L	86
	12-60	18-35	1.20-1.35	0.06-0.20	0.08-0.15	Moderate	0.0-1.0	0.49	0.49			
42--------------- Medburn	0-4	5-18	1.35-1.50	2.00-6.00	0.10-0.12	Low------	1.0-2.0	0.24	0.24	5	3	86
	4-41	5-18	1.35-1.50	2.00-6.00	0.09-0.12	Low------	0.0-1.0	0.17	0.17			
	41-60	5-18	1.35-1.50	2.00-6.00	0.07-0.12	Low------	0.0-1.0	0.17	0.17			
43--------------- Medburn	0-8	5-18	1.35-1.50	2.00-6.00	0.09-0.11	Low------	1.0-2.0	0.24	0.24	5	3	86
	8-46	5-18	1.35-1.50	2.00-6.00	0.07-0.11	Low------	0.0-1.0	0.17	0.17			
	46-60	5-18	1.35-1.50	2.00-6.00	0.03-0.07	Low------	0.0-1.0	0.17	0.17			
44. Pits												
45. Playas												
46:												
Playas.												
Saltair---------	0-8	20-27	1.15-1.25	0.02-0.60	0.16-0.18	Low------	0.0-1.0	0.49	0.49	5	4L	86
	8-21	20-27	1.15-1.25	0.20-0.60	0.16-0.18	Low------	0.0-0.5	0.49	0.49			
	21-60	27-35	1.20-1.30	0.06-0.20	0.16-0.18	Moderate	0.0-0.5	0.49	0.49			
46A:												
Podmor----------	0-3	18-27	1.20-1.30	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.10	0.37	2	7	38
	3-16	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.10	0.32			
	16-23	18-27	1.40-1.50	0.60-2.00	0.07-0.11	Low------	0.5-1.0	0.10	0.32			
	23-33	---	---	0.01-2.00	---	---------	---	---	---			
Dateman---------	0-11	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low------	3.0-6.0	0.15	0.37	2	7	38
	11-22	18-27	1.30-1.40	0.60-2.00	0.12-0.14	Low------	2.0-4.0	0.15	0.37			
	22-36	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	1.0-2.0	0.10	0.32			
	36-46	---	---	0.00-0.60	---	---------	---	---	---			
Rock outcrop.												

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
47:												
Podmor----------	0-3	18-27	1.20-1.30	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.10	0.37	2	7	38
	3-16	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.10	0.32			
	16-23	18-27	1.40-1.50	0.60-2.00	0.07-0.11	Low------	0.5-1.0	0.10	0.32			
	23-33	---	---	0.01-2.00	---	---------	---	---	---			
Onaqui----------	0-4	18-27	1.20-1.30	0.20-6.00	0.07-0.11	Low------	2.0-4.0	0.10	0.37	1	7	38
	4-15	18-27	1.30-1.40	0.20-6.00	0.05-0.07	Low------	0.5-1.0	0.05	0.32			
	15-25	---	---	0.01-6.00	---	---------	---	---	---			
Rock outcrop.												
48:												
Reywat----------	0-2	15-20	1.25-1.40	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.05	0.32	1	7	38
	2-11	27-35	1.15-1.30	0.20-0.60	0.09-0.12	Low------	0.5-1.0	0.10	0.37			
	11-21	---	---	0.01-0.60	---	---------	---	---	---			
Broad-----------	0-4	15-20	1.20-1.35	0.60-2.00	0.11-0.14	Low------	3.0-5.0	0.10	0.20	2	6	48
	4-14	15-20	1.25-1.40	0.60-2.00	0.11-0.14	Low------	2.0-4.0	0.15	0.24			
	14-23	27-35	1.25-1.40	0.20-0.60	0.09-0.12	Moderate	0.5-1.0	0.10	0.32			
	23-36	15-20	1.25-1.40	0.60-2.00	0.08-0.11	Low------	0.0-0.5	0.10	0.37			
	36-46	---	---	0.20-2.00	---	---------	---	---	---			
Rock outcrop.												
49:												
Ridd------------	0-13	10-15	1.35-1.45	2.00-6.00	0.06-0.07	Low------	2.0-4.0	0.10	0.28	2	5	56
	13-22	13-18	1.35-1.45	0.60-2.00	0.06-0.07	Low------	0.0-1.0	0.05	0.17			
	22-36	5-15	1.35-1.45	2.00-6.00	0.06-0.07	Low------	0.0-1.0	0.05	0.17			
	36-46	---	---	0.01-6.00	---	---------	---	---	---			
Rock outcrop.												
50:												
Ridd------------	0-13	10-15	1.35-1.45	2.00-6.00	0.06-0.07	Low------	2.0-4.0	0.10	0.28	2	5	56
	13-22	13-18	1.35-1.45	0.60-2.00	0.06-0.07	Low------	0.0-1.0	0.05	0.17			
	22-36	5-15	1.35-1.45	2.00-6.00	0.06-0.07	Low------	0.0-1.0	0.05	0.17			
	36-46	---	---	0.01-6.00	---	---------	---	---	---			
Wasatch---------	0-18	1-10	1.45-1.55	6.00-20.00	0.06-0.07	Low------	2.0-4.0	0.10	0.10	5	2	134
	18-60	1-10	1.45-1.55	6.00-20.00	0.05-0.07	Low------	0.0-1.0	0.10	0.10			
Rock outcrop.												
51:												
Rock outcrop.												
Lundy-----------	0-11	18-27	1.20-1.30	0.60-2.00	0.08-0.11	Low------	2.0-4.0	0.05	0.17	1	6	48
	11-18	18-27	1.30-1.40	0.60-2.00	0.08-0.11	Low------	0.0-1.0	0.10	0.37			
	18-28	---	---	0.00-0.60	---	---------	---	---	---			
52.												
Salt flats												
53:												
Saltair---------	0-8	20-27	1.15-1.25	0.02-0.60	0.16-0.18	Low------	0.0-1.0	0.49	0.49	5	4L	86
	8-21	20-27	1.15-1.25	0.20-0.60	0.16-0.18	Low------	0.0-0.5	0.49	0.49			
	21-60	27-35	1.20-1.30	0.06-0.20	0.16-0.18	Moderate	0.0-0.5	0.49	0.49			
Playas.												

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Shrink-swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
54---------------- Scalade	0-3	5-10	1.35-1.50	0.60-2.00	0.13-0.16	Low-------	1.0-2.0	0.55	0.55	2	3	86
	3-9	5-10	1.35-1.50	0.60-2.00	0.13-0.16	Low-------	0.5-1.0	0.55	0.55			
	9-17	5-10	1.35-1.50	0.60-2.00	0.13-0.16	Low-------	0.5-1.0	0.55	0.55			
	17-24	---	---	0.00-0.60	---	----------	---	---	---			
	24-42	2-10	1.25-1.60	2.00-6.00	0.03-0.10	Low-------	0.0-0.5	0.20	0.32			
	42-60	---	---	0.00-0.20	---	----------	---	---	---			
55:												
Scalade----------	0-3	5-10	1.35-1.50	0.60-2.00	0.13-0.16	Low-------	1.0-2.0	0.55	0.55	2	3	86
	3-9	5-10	1.35-1.50	0.60-2.00	0.13-0.16	Low-------	0.5-1.0	0.55	0.55			
	9-17	5-10	1.35-1.50	0.60-2.00	0.13-0.16	Low-------	0.5-1.0	0.55	0.55			
	17-24	---	---	0.00-0.60	---	----------	---	---	---			
	24-42	2-10	1.25-1.60	2.00-6.00	0.03-0.10	Low-------	0.0-0.5	0.20	0.32			
	42-60	---	---	0.00-0.20	---	----------	---	---	---			
Jericho----------	0-4	10-18	1.30-1.50	2.00-6.00	0.08-0.09	Low-------	1.0-2.0	0.15	0.24	1	4	86
	4-9	10-18	1.30-1.50	2.00-6.00	0.08-0.09	Low-------	0.0-1.0	0.17	0.17			
	9-16	10-18	1.30-1.50	2.00-6.00	0.06-0.07	Low-------	0.0-1.0	0.10	0.17			
	16-20	---	---	0.00-0.20	---	----------	---	---	---			
	20-40	0-10	1.30-1.50	6.00-20.00	0.01-0.03	Low-------	0.0-0.5	0.02	0.17			
	40-60	---	---	0.00-0.20	---	----------	0.0-0.5	---	---			
Medburn----------	0-4	5-18	1.35-1.50	2.00-6.00	0.10-0.12	Low-------	1.0-2.0	0.24	0.24	5	3	86
	4-41	5-18	1.35-1.50	2.00-6.00	0.09-0.12	Low-------	0.0-1.0	0.17	0.17			
	41-60	5-18	1.35-1.50	2.00-6.00	0.07-0.12	Low-------	0.0-1.0	0.17	0.17			
56---------------- Skumpah	0-5	18-27	1.15-1.40	0.20-0.60	0.16-0.18	Low-------	0.5-1.0	0.43	0.43	5	4L	86
	5-14	27-35	1.30-1.50	0.20-0.60	0.08-0.16	Moderate	0.0-0.5	0.32	0.32			
	14-60	15-35	1.20-1.40	0.20-0.60	0.02-0.08	Moderate	0.0-0.5	0.37	0.37			
57---------------- Skumpah	0-2	15-27	1.15-1.30	0.20-0.60	0.17-0.18	Low-------	0.5-1.0	0.49	0.49	5	4L	86
	2-9	27-35	1.15-1.30	0.20-0.60	0.15-0.17	Moderate	0.0-0.5	0.43	0.43			
	9-26	18-35	1.15-1.30	0.20-0.60	0.10-0.15	Moderate	0.0-0.5	0.49	0.49			
	26-60	18-35	1.15-1.30	0.20-0.60	0.04-0.10	Moderate	0.0-0.5	0.49	0.49			
58---------------- Skumpah	0-2	15-27	1.15-1.30	0.20-0.60	0.15-0.17	Low-------	0.5-1.0	0.49	0.49	5	4L	86
	2-9	27-35	1.15-1.30	0.20-0.60	0.10-0.15	Moderate	0.0-0.5	0.43	0.43			
	9-32	18-35	1.15-1.30	0.20-0.60	0.11-0.15	Moderate	0.0-0.5	0.49	0.49			
	32-60	18-35	1.15-1.30	0.20-0.60	0.04-0.10	Moderate	0.0-0.5	0.49	0.49			
59---------------- Skumpah	0-4	18-27	1.15-1.40	0.20-0.60	0.15-0.17	Low-------	0.5-1.0	0.49	0.49	5	4L	86
	4-11	27-35	1.30-1.50	0.20-0.60	0.11-0.15	Moderate	0.0-0.5	0.43	0.43			
	11-60	15-35	1.20-1.40	0.20-0.60	0.04-0.10	Moderate	0.0-0.5	0.49	0.49			
60:												
Skumpah----------	0-4	18-27	1.15-1.40	0.20-0.60	0.15-0.17	Low-------	0.5-1.0	0.49	0.49	5	4L	86
	4-11	27-35	1.30-1.50	0.20-0.60	0.11-0.15	Moderate	0.0-0.5	0.43	0.43			
	11-60	15-35	1.20-1.40	0.20-0.60	0.04-0.10	Moderate	0.0-0.5	0.49	0.49			
Yenrab-----------	0-5	5-10	1.40-1.55	6.00-20.00	0.08-0.09	Low-------	0.0-1.0	0.15	0.15	5	2	134
	5-60	2-5	1.40-1.55	6.00-20.00	0.05-0.07	Low-------	0.0-0.5	0.10	0.10			
61. Slickens and mine dumps												
62---------------- Spager	0-3	15-27	1.15-1.25	2.00-6.00	0.11-0.13	Low-------	1.0-2.0	0.10	0.37	1	5	56
	3-14	15-27	1.15-1.30	2.00-6.00	0.08-0.11	Low-------	0.5-1.0	0.10	0.32			
	14-20	---	---	0.00-0.60	---	----------	---	---	---			
	20-60	0-10	1.30-1.50	0.60-20.00	0.01-0.03	Low-------	0.0-0.5	0.02	0.10			

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								K	Kf	T		
	In	Pct	g/cc	In/hr	In/in		Pct					
63 Springmeyer	0-4	10-20	1.35-1.50	2.00-6.00	0.08-0.09	Low	2.0-5.0	0.10	0.32	4	4	86
	4-14	10-20	1.35-1.50	2.00-6.00	0.08-0.09	Low	2.0-5.0	0.10	0.32			
	14-29	25-35	1.25-1.40	0.20-0.60	0.12-0.15	Moderate	0.5-1.0	0.10	0.37			
	29-42	10-18	1.35-1.50	2.00-6.00	0.06-0.07	Low	0.5-0.8	0.10	0.32			
	42-60	3-8	1.45-1.60	6.00-20.00	0.03-0.05	Low	0.0-0.5	0.05	0.17			
64 Taylorsflat	0-4	18-27	1.25-1.35	0.60-2.00	0.15-0.17	Low	1.0-2.0	0.28	0.32	5	4L	86
	4-9	18-27	1.25-1.35	0.20-0.60	0.15-0.17	Low	0.0-1.0	0.37	0.43			
	9-60	18-27	1.25-1.35	0.20-0.60	0.10-0.16	Low	0.0-1.0	0.37	0.43			
65 Taylorsflat	0-3	18-27	1.30-1.40	0.60-2.00	0.14-0.16	Low	1.0-2.0	0.32	0.37	5	4L	86
	3-9	18-27	1.30-1.40	0.20-0.60	0.14-0.16	Low	0.0-1.0	0.37	0.32			
	9-60	18-27	1.30-1.40	0.20-0.60	0.10-0.15	Low	0.0-1.0	0.37	0.32			
65A:												
Theriot	0-3	8-14	1.20-1.40	0.60-2.00	0.08-0.11	Low	0.0-1.0	0.10	0.43	1	6	48
	3-14	5-14	1.25-1.45	0.60-2.00	0.04-0.06	Low	---	0.10	0.32			
	14-18	---	---	0.00-0.01	---	---	---	---	---			
Rock outcrop.												
66 Timpie	0-5	18-27	1.15-1.30	0.20-0.60	0.16-0.18	Low	0.5-1.0	0.43	0.43	5	4L	86
	5-14	18-27	1.15-1.30	0.20-0.60	0.15-0.17	Low	0.0-0.5	0.49	0.55			
	14-60	18-27	1.15-1.30	0.20-0.60	0.04-0.10	Low	0.0-0.5	0.55	0.55			
67 Timpie	0-3	18-27	1.15-1.30	0.20-0.60	0.13-0.17	Low	0.5-1.0	0.43	0.43	5	4L	86
	3-21	18-27	1.15-1.30	0.20-0.60	0.11-0.15	Low	0.0-0.5	0.49	0.49			
	21-60	18-27	1.15-1.30	0.20-0.60	0.04-0.10	Low	0.0-0.5	0.55	0.55			
68:												
Timpie	0-3	18-27	1.15-1.30	0.20-0.60	0.13-0.17	Low	0.5-1.0	0.43	0.43	5	4L	86
	3-21	18-27	1.15-1.30	0.20-0.60	0.11-0.15	Low	0.0-0.5	0.49	0.49			
	21-60	18-27	1.15-1.30	0.20-0.60	0.04-0.10	Low	0.0-0.5	0.55	0.55			
Tooele	0-10	5-15	1.35-1.50	2.00-6.00	0.07-0.11	Low	0.5-1.0	0.37	0.37	5	3	86
	10-60	5-15	1.35-1.50	2.00-6.00	0.05-0.09	Low	0.0-0.5	0.43	0.43			
69 Tooele	0-3	5-15	1.35-1.50	2.00-6.00	0.10-0.12	Low	0.5-1.0	0.37	0.37	4	3	86
	3-42	5-15	1.35-1.50	2.00-6.00	0.10-0.12	Low	0.0-0.5	0.43	0.43			
	42-60	2-10	1.40-1.60	6.00-20.00	0.05-0.07	Low	0.0-0.5	0.32	0.32			
70 Tooele	0-10	5-15	1.35-1.50	2.00-6.00	0.07-0.11	Low	0.5-1.0	0.37	0.37	5	3	86
	10-60	5-15	1.35-1.50	2.00-6.00	0.05-0.09	Low	0.0-0.5	0.43	0.43			
71 Yeates Hollow	0-12	18-27	1.20-1.30	0.60-2.00	0.11-0.13	Low	2.0-5.0	0.10	0.37	5	6	48
	12-44	35-40	1.30-1.40	0.06-0.20	0.09-0.12	Moderate	0.0-1.0	0.10	0.24			
	44-60	20-27	1.30-1.40	0.60-2.00	0.05-0.07	Low	0.0-1.0	0.05	0.24			
72 Yeates Hollow	0-12	18-27	1.20-1.30	0.60-2.00	0.08-0.10	Low	2.0-5.0	0.05	0.37	5	7	38
	12-38	35-40	1.30-1.40	0.06-0.20	0.09-0.12	Moderate	0.0-1.0	0.10	0.24			
	38-60	20-27	1.30-1.40	0.60-2.00	0.05-0.07	Low	0.0-1.0	0.05	0.24			
73 Yenrab	0-15	2-5	1.40-1.55	6.00-20.00	0.06-0.07	Low	0.0-1.0	0.10	0.10	5	1	220
	15-60	2-5	1.40-1.55	6.00-20.00	0.05-0.07	Low	0.0-0.5	0.10	0.10			
74:												
Yenrab	0-15	2-5	1.40-1.55	6.00-20.00	0.06-0.07	Low	0.0-1.0	0.10	0.10	5	1	220
	15-60	2-5	1.40-1.55	6.00-20.00	0.05-0.07	Low	0.0-0.5	0.10	0.10			
Badlands.												

TABLE 15.--PHYSICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Shrink- swell potential	Organic matter	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in		Pct					
75:												
Yenrab----------	0-5	5-10	1.40-1.55	6.00-20.00	0.08-0.09	Low------	0.0-1.0	0.15	0.15	5	2	134
	5-60	2-5	1.40-1.55	6.00-20.00	0.05-0.07	Low------	0.0-0.5	0.10	0.10			
Tooele----------	0-10	5-15	1.35-1.50	2.00-6.00	0.07-0.11	Low------	0.5-1.0	0.37	0.37	5	3	86
	10-60	5-15	1.35-1.50	2.00-6.00	0.05-0.09	Low------	0.0-0.5	0.43	0.43			

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
1-----------------	0-10	10-18	10.0-20.0	7.9-8.4	1-15	---	---	---
Abela	10-20	10-18	5.0-10.0	7.9-9.0	3-15	---	---	---
	20-60	10-18	5.0-10.0	8.5-9.0	25-40	---	0-4	---
2-----------------	0-11	10-18	10.0-20.0	7.9-8.4	1-15	---	---	---
Abela	11-22	10-18	5.0-10.0	7.9-9.0	3-15	---	---	---
	22-60	10-18	5.0-10.0	8.5-9.0	25-40	---	0-4	---
3:								
Amtoft-----------	0-11	12-18	5.0-15.0	7.9-9.0	20-40	---	0-4	---
	11-17	12-20	5.0-15.0	7.9-9.0	40-80	---	0-4	---
	17-27	---	---	---	---	---	---	---
Rock outcrop.								
4:								
Amtoft-----------	0-9	12-18	5.0-15.0	7.9-9.0	20-40	---	0-4	---
	9-16	12-20	5.0-15.0	7.9-9.0	40-80	---	0-4	---
	16-26	---	---	---	---	---	---	---
Rock outcrop.								
5:								
Berent-----------	0-6	0-10	0.0-10.0	7.4-8.4	1-15	---	0-2	---
	6-60	0-5	0.0-5.0	7.9-9.0	1-15	---	0-2	---
Hiko Peak--------	0-4	10-18	5.0-15.0	7.9-8.4	15-30	---	0-2	0-13
	4-12	10-18	5.0-10.0	7.9-9.0	15-30	---	0-2	0-13
	12-60	10-18	5.0-10.0	8.5-9.0	30-40	---	0-4	13-30
6-----------------	0-10	18-27	10.0-20.0	7.4-8.4	3-15	---	0-2	---
Birdow	10-28	18-27	10.0-20.0	7.4-8.4	3-15	---	0-2	---
	28-60	18-27	10.0-20.0	7.9-9.0	3-15	---	0-2	---
7-----------------	0-7	10-18	10.0-20.0	7.4-9.0	15-30	---	0-2	---
Borvant	7-18	10-18	5.0-10.0	7.9-9.0	40-60	---	0-2	---
	18-25	---	---	---	---	---	---	---
	25-60	0-10	0.0-5.0	7.9-9.0	40-60	---	0-2	---
8-----------------	0-6	18-25	15.0-25.0	7.9-9.0	15-25	---	4-16	5-8
Bramwell	6-20	24-27	15.0-30.0	8.5-9.0	20-30	---	8-16	5-13
	20-28	27-35	15.0-30.0	8.5-9.0	30-40	---	8-16	5-13
	28-36	27-35	15.0-30.0	8.5-9.0	20-30	---	8-16	5-13
	36-60	27-35	15.0-30.0	8.5-9.0	20-30	---	8-16	5-13
10:								
Broad------------	0-4	15-20	10.0-20.0	6.6-7.8	---	---	---	---
	4-10	15-20	10.0-20.0	6.6-7.8	---	---	---	---
	10-20	27-35	10.0-20.0	7.4-8.4	---	---	---	---
	20-38	15-20	5.0-15.0	7.9-9.0	15-30	---	0-8	---
	38-42	---	---	---	---	---	---	---
Reywat-----------	0-4	15-20	10.0-20.0	6.6-7.8	---	---	---	---
	4-13	27-35	10.0-20.0	6.6-8.4	---	---	0-2	---
	13-23	---	---	---	---	---	---	---
Rock outcrop.								
11:								
Checkett---------	0-3	18-22	10.0-15.0	7.9-9.0	1-15	---	0-4	---
	3-14	22-30	10.0-20.0	7.9-9.0	3-15	---	0-4	---
	14-24	---	---	---	---	---	---	---

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
11:								
Rock outcrop.								
12---------------	0-5	10-18	5.0-10.0	7.9-8.4	15-40	---	0-2	5-13
Cliffdown	5-60	8-18	5.0-10.0	8.5-9.0	15-40	---	2-8	5-13
13---------------	0-9	18-27	10.0-25.0	6.6-7.3	---	---	---	---
Cristo	9-22	35-40	15.0-25.0	6.6-7.3	---	---	---	---
	22-35	27-40	10.0-25.0	6.1-7.8	---	---	---	---
	35-45	---	---	---	---	---	---	---
14:								
Dateman---------	0-11	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	11-22	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	22-36	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	36-46	---	---	---	---	---	---	---
Podmor----------	0-3	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	3-16	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	16-23	18-27	10.0-15.0	6.6-7.8	---	---	---	---
	23-43	---	---	---	---	---	---	---
Rock outcrop.								
14A:								
Dateman---------	0-11	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	11-22	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	22-36	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	36-46	---	---	---	---	---	---	---
Podmor----------	0-3	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	3-16	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	16-23	18-27	10.0-15.0	6.6-7.8	---	---	---	---
	23-33	---	---	---	---	---	---	---
Rock outcrop.								
15---------------	0-10	18-24	10.0-20.0	6.6-7.8	---	---	0-2	---
Doyce	10-21	27-35	10.0-20.0	7.4-8.4	3-15	---	0-2	---
	21-60	18-27	5.0-15.0	7.9-9.0	15-40	---	0-4	5-13
16.								
Dune land								
17---------------	0-1	0-2	0.0-5.0	7.4-9.0	40-90	---	2-8	5-13
Dynal	1-60	0-2	0.0-5.0	7.9-9.0	40-90	---	2-8	13-30
18:								
Dynal-----------	0-6	0-2	0.0-5.0	7.4-9.0	40-90	---	2-8	5-13
	6-60	0-2	0.0-5.0	7.9-9.0	40-90	---	2-8	13-30
Tooele----------	0-10	5-15	0.0-10.0	8.5-9.6	15-40	---	4-8	0-13
	10-60	5-15	0.0-10.0	8.5-9.6	15-40	---	8-16	13-50
19---------------	0-8	18-27	10.0-20.0	7.4-8.4	3-15	---	0-2	---
Erda	8-14	18-27	10.0-20.0	7.4-8.4	3-15	---	0-2	---
	14-39	18-27	10.0-15.0	7.9-9.0	15-40	---	0-2	5-13
	39-60	18-27	10.0-15.0	7.9-9.0	10-35	---	0-8	13-30

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
20:								
Flygare---------	0-22	18-27	20.0-30.0	5.6-6.5	---	---	---	---
	22-36	15-27	5.0-15.0	5.6-6.5	---	---	---	---
	36-50	27-35	10.0-20.0	5.6-6.5	---	---	---	---
	50-60	18-27	10.0-15.0	5.6-6.5	---	---	---	---
Dateman---------	0-11	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	11-22	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	22-36	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	36-46	---	---	---	---	---	---	---
Rock outcrop.								
21--------------- Hiko Peak	0-4	10-18	5.0-15.0	7.9-8.4	15-30	---	0-2	0-13
	4-12	10-18	5.0-10.0	7.9-9.0	15-30	---	0-2	0-13
	12-60	10-18	5.0-10.0	8.5-9.0	30-40	---	0-4	13-30
22--------------- Hiko Peak	0-4	10-18	5.0-15.0	7.9-8.4	15-30	---	0-2	0-13
	4-12	10-18	5.0-10.0	7.9-9.0	15-30	---	0-2	0-13
	12-60	10-18	5.0-10.0	8.5-9.0	30-40	---	0-4	13-30
23:								
Hiko Peak-------	0-4	10-18	5.0-15.0	7.9-8.4	15-30	---	0-2	0-13
	4-12	10-18	5.0-10.0	7.9-9.0	15-30	---	0-2	0-13
	12-60	10-18	5.0-10.0	8.5-9.0	30-40	---	0-4	13-30
Checkett--------	0-3	18-22	10.0-15.0	7.9-9.0	1-15	---	0-4	---
	3-14	22-30	10.0-20.0	7.9-9.0	3-15	---	0-4	---
	14-18	---	---	---	---	---	---	---
24:								
Hiko Peak-------	0-4	10-18	5.0-15.0	7.9-8.4	15-30	---	0-2	0-13
	4-12	10-18	5.0-10.0	7.9-9.0	15-30	---	0-2	0-13
	12-60	10-18	5.0-10.0	8.5-9.0	30-40	---	0-4	13-30
Taylorsflat-----	0-4	18-27	10.0-20.0	7.9-8.4	3-20	---	0-2	0-10
	4-9	18-27	5.0-15.0	7.9-8.4	3-25	---	0-2	5-13
	9-60	18-27	5.0-15.0	8.5-9.0	15-40	---	2-16	13-30
25--------------- Hiko Springs	0-4	10-18	5.0-10.0	7.9-8.4	3-15	---	0-2	0-13
	4-18	10-18	5.0-10.0	7.9-9.0	3-15	---	0-2	0-13
	18-60	10-18	5.0-10.0	8.5-9.0	15-40	---	4-8	13-30
26--------------- Holmes	0-10	15-20	10.0-20.0	6.6-7.3	---	---	---	---
	10-29	27-35	10.0-20.0	6.6-7.3	---	---	---	---
	29-37	15-20	5.0-10.0	6.6-7.3	---	---	---	---
	37-60	2-5	0.0-5.0	6.6-7.8	0-3	---	---	---
27:								
Izamatch--------	0-3	8-18	5.0-15.0	7.9-9.0	20-30	---	0-2	0-5
	3-10	8-18	5.0-15.0	8.5-9.0	20-30	---	0-2	0-5
	10-30	0-8	1.0-10.0	7.9-9.6	20-30	---	0-2	5-12
	30-60	0-8	1.0-10.0	8.5-9.6	30-40	---	0-4	13-30
Cliffdown-------	0-3	10-18	5.0-10.0	8.5-9.0	15-40	---	0-2	1-5
	3-60	8-18	5.0-10.0	8.5-9.0	15-40	---	8-16	5-12
28:								
Izamatch--------	0-5	8-18	5.0-15.0	7.9-9.0	20-30	---	0-2	0-5
	5-10	8-18	5.0-15.0	8.5-9.0	20-30	---	0-2	0-5
	10-24	0-8	1.0-10.0	7.9-9.6	20-30	---	0-2	5-12
	24-60	0-8	1.0-10.0	8.5-9.6	30-40	---	0-4	13-30

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
28:								
Cliffdown--------	0-5	10-18	5.0-10.0	7.9-8.4	15-40	---	0-2	5-13
	5-60	8-18	5.0-10.0	8.5-9.0	15-40	---	2-8	5-13
29----------------	0-3	10-18	5.0-15.0	7.9-9.0	3-15	---	0-2	---
Jericho	3-9	10-18	5.0-10.0	7.9-9.0	10-20	---	0-2	---
	9-14	10-18	5.0-10.0	7.9-9.0	15-40	---	0-2	5-13
	14-19	---	---	---	---	---	---	---
	19-33	0-10	0.0-5.0	7.9-9.0	10-30	---	0-2	5-13
	33-60	---	---	---	---	---	---	---
30----------------	0-5	10-18	5.0-15.0	7.9-8.4	0-3	---	0-2	---
Junkett	5-11	27-35	10.0-20.0	7.9-8.4	0-3	---	0-2	---
	11-16	27-35	10.0-20.0	7.9-8.4	3-15	---	0-2	---
	16-24	10-18	5.0-10.0	8.5-9.0	15-40	---	0-2	---
	24-30	---	---	---	---	---	---	---
	30-60	0-10	0.0-5.0	8.5-9.0	15-40	---	0-2	---
31----------------	0-4	8-18	5.0-15.0	7.9-9.0	10-25	---	2-8	0-13
Kanosh	4-8	8-18	5.0-15.0	7.9-9.0	15-30	---	2-8	0-13
	8-27	5-18	0.0-10.0	8.5-9.0	20-40	1-5	4-16	13-30
	27-60	5-18	0.0-10.0	8.5-9.0	20-40	1-5	4-16	13-30
32:								
Kanosh-----------	0-4	8-18	5.0-15.0	7.9-9.0	10-25	---	2-8	0-13
	4-8	8-18	5.0-15.0	7.9-9.0	15-30	---	2-8	0-13
	8-27	5-18	0.0-10.0	8.5-9.0	20-40	1-5	4-16	13-30
	27-60	5-18	0.0-10.0	8.5-9.0	20-40	1-5	4-16	13-30
Saltair----------	0-8	20-27	10.0-15.0	7.9-9.0	15-40	0-2	16-32	13-90
	8-21	20-27	10.0-15.0	7.9-9.0	15-40	0-2	16-32	13-90
	21-60	27-35	10.0-20.0	7.9-9.0	15-40	0-2	16-32	13-90
Logan------------	0-4	18-27	10.0-20.0	7.9-9.0	10-20	0-1	2-4	---
	4-15	18-27	10.0-20.0	7.9-9.0	10-20	---	2-4	---
	15-60	27-35	10.0-20.0	7.9-9.0	15-40	0-2	2-4	---
33----------------	0-11	18-27	10.0-20.0	6.6-7.8	---	---	---	---
Kapod	11-30	27-35	10.0-20.0	6.6-7.8	---	---	---	---
	30-60	20-27	10.0-15.0	7.4-8.4	15-40	---	0-2	---
34----------------	0-12	20-25	10.0-20.0	6.6-7.8	---	---	---	---
Kapod	12-26	25-35	10.0-20.0	6.6-7.8	---	---	---	---
	26-60	10-20	5.0-10.0	7.4-8.4	15-40	---	0-2	---
35----------------	0-11	20-25	10.0-20.0	6.6-7.8	---	---	---	---
Kapod	11-25	25-35	10.0-20.0	6.6-7.8	---	---	---	---
	25-60	10-20	5.0-10.0	7.4-8.4	15-40	---	0-2	---
36----------------	0-10	8-16	5.0-15.0	6.6-7.3	---	---	---	---
Kilburn	10-19	8-16	5.0-15.0	6.6-7.3	---	---	---	---
	19-36	10-18	5.0-10.0	6.6-7.3	---	---	---	---
	36-60	4-8	0.0-5.0	6.6-7.8	0-3	---	---	---
37----------------	0-7	16-22	10.0-20.0	6.6-7.3	---	---	---	---
Lakewin	7-18	18-25	5.0-15.0	6.6-7.8	0-10	---	---	---
	18-30	10-15	5.0-10.0	7.9-8.4	15-30	---	0-2	---
	30-60	0-5	0.0-5.0	7.9-8.4	15-30	---	0-4	---

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
38:								
Lodar-----------	0-8	18-27	10.0-20.0	7.4-8.4	15-40	---	---	---
	8-16	18-27	10.0-15.0	7.9-9.0	40-80	---	---	---
	16-26	---	---	---	---	---	---	---
Lundy-----------	0-11	18-27	10.0-20.0	7.4-8.4	3-40	---	---	---
	11-18	18-27	10.0-15.0	7.4-8.4	40-60	---	---	---
	18-28	---	---	---	---	---	---	---
Rock outcrop.								
39--------------- Logan	0-4	18-27	10.0-20.0	7.9-9.0	10-20	0-1	2-4	---
	4-15	18-27	10.0-20.0	7.9-9.0	10-20	---	2-4	---
	15-60	27-35	10.0-20.0	7.9-9.0	15-40	0-2	2-4	---
40:								
Lundy-----------	0-11	18-27	10.0-20.0	7.4-8.4	3-40	---	---	---
	11-18	18-27	10.0-15.0	7.4-8.4	40-60	---	---	---
	18-28	---	---	---	---	---	---	---
Dateman----------	0-11	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	11-22	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	22-36	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	36-46	---	---	---	---	---	---	---
Rock outcrop.								
41--------------- Manassa	0-12	18-27	10.0-20.0	7.9-9.0	3-15	---	0-4	5-13
	12-60	18-35	10.0-20.0	8.5-9.6	15-40	---	4-16	13-50
42--------------- Medburn	0-4	5-18	5.0-15.0	7.9-8.4	10-30	---	0-2	0-13
	4-41	5-18	5.0-10.0	7.9-9.0	10-30	---	0-2	13-30
	41-60	5-18	5.0-10.0	8.5-9.0	10-30	---	2-4	13-50
43--------------- Medburn	0-8	5-18	5.0-15.0	8.5-9.0	3-40	---	2-4	13-30
	8-46	5-18	0.0-10.0	8.5-9.0	3-40	---	4-8	13-30
	46-60	5-18	0.0-10.0	8.5-9.0	3-40	---	8-16	13-30
44. Pits								
45. Playas								
46: Playas.								
Saltair----------	0-8	20-27	10.0-15.0	7.9-9.0	15-40	0-2	16-32	13-90
	8-21	20-27	10.0-15.0	7.9-9.0	15-40	0-2	16-32	13-90
	21-60	27-35	10.0-20.0	7.9-9.0	15-40	0-2	16-32	13-90
46A:								
Podmor-----------	0-3	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	3-16	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	16-23	18-27	10.0-15.0	6.6-7.8	---	---	---	---
	23-33	---	---	---	---	---	---	---
Dateman----------	0-11	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	11-22	18-27	10.0-20.0	6.1-7.3	---	---	---	---
	22-36	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	36-46	---	---	---	---	---	---	---
Rock outcrop.								

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
47:								
Podmor----------	0-3	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	3-16	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	16-23	18-27	10.0-15.0	6.6-7.8	---	---	---	---
	23-33	---	---	---	---	---	---	---
Onaqui----------	0-4	18-27	10.0-20.0	6.6-7.8	---	---	---	---
	4-15	18-27	10.0-15.0	6.6-7.8	---	---	---	---
	15-25	---	---	---	---	---	---	---
Rock outcrop.								
48:								
Reywat----------	0-2	15-20	10.0-20.0	6.6-7.8	---	---	---	---
	2-11	27-35	10.0-20.0	6.6-8.4	---	---	0-2	---
	11-21	---	---	---	---	---	---	---
Broad-----------	0-4	15-20	10.0-20.0	6.6-7.8	---	---	---	---
	4-14	15-20	10.0-20.0	6.6-7.8	---	---	---	---
	14-23	27-35	10.0-20.0	7.4-8.4	---	---	---	---
	23-36	15-20	5.0-15.0	7.9-9.0	15-30	---	0-2	0-13
	36-46	---	---	---	---	---	---	---
Rock outcrop.								
49:								
Ridd------------	0-13	10-15	10.0-15.0	6.6-7.3	---	---	---	---
	13-22	13-18	5.0-10.0	6.6-7.3	---	---	---	---
	22-36	5-15	0.0-10.0	6.6-7.3	---	---	---	---
	36-46	---	---	---	---	---	---	---
Rock outcrop.								
50:								
Ridd------------	0-13	10-15	10.0-15.0	6.6-7.3	---	---	---	---
	13-22	13-18	5.0-10.0	6.6-7.3	---	---	---	---
	22-36	5-15	0.0-10.0	6.6-7.3	---	---	---	---
	36-46	---	---	---	---	---	---	---
Wasatch---------	0-18	1-10	0.0-10.0	6.1-7.3	---	---	---	---
	18-60	1-10	0.0-5.0	6.1-7.8	---	---	---	---
Rock outcrop.								
51:								
Rock outcrop.								
Lundy-----------	0-11	18-27	10.0-20.0	7.4-8.4	3-40	---	---	---
	11-18	18-27	10.0-15.0	7.4-8.4	40-60	---	---	---
	18-28	---	---	---	---	---	---	---
52.								
Salt flats								
53:								
Saltair---------	0-8	20-27	10.0-15.0	7.9-9.0	15-40	0-2	16-32	13-90
	8-21	20-27	10.0-15.0	7.9-9.0	15-40	0-2	16-32	13-90
	21-60	27-35	10.0-20.0	7.9-9.0	15-40	0-2	16-32	13-90
Playas.								

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
54----------------	0-3	5-10	5.0-10.0	7.4-8.4	3-15	---	0-2	---
Scalade	3-9	5-10	0.0-5.0	7.4-8.4	3-15	---	0-2	---
	9-17	5-10	0.0-5.0	7.9-9.0	15-40	---	2-4	---
	17-24	---	---	---	---	---	---	---
	24-42	2-10	0.0-5.0	7.9-9.0	15-40	---	4-8	---
	42-60	---	---	---	---	---	---	---
55:								
Scalade----------	0-3	5-10	5.0-10.0	7.4-8.4	3-15	---	0-2	---
	3-9	5-10	0.0-5.0	7.4-8.4	3-15	---	0-2	---
	9-17	5-10	0.0-5.0	7.9-9.0	15-40	---	2-4	---
	17-24	---	---	---	---	---	---	---
	24-42	2-10	0.0-5.0	7.9-9.0	15-40	---	4-8	---
	42-60	---	---	---	---	---	---	---
Jericho----------	0-4	10-18	5.0-15.0	7.9-9.0	3-15	---	0-2	---
	4-9	10-18	5.0-10.0	7.9-9.0	10-20	---	0-2	---
	9-16	10-18	5.0-10.0	7.9-9.0	15-40	---	0-2	5-13
	16-20	---	---	---	---	---	---	---
	20-40	0-10	0.0-5.0	7.9-9.0	10-30	---	0-2	5-13
	40-60	---	---	---	---	---	---	---
Medburn----------	0-4	5-18	5.0-15.0	7.9-8.4	10-30	---	0-2	0-13
	4-41	5-18	5.0-10.0	7.9-9.0	10-30	---	0-2	13-30
	41-60	5-18	5.0-10.0	8.5-9.0	10-30	---	2-4	13-50
56----------------	0-5	18-27	10.0-15.0	8.5-9.0	15-30	0-2	2-8	13-30
Skumpah	5-14	27-35	10.0-20.0	8.5-9.0	15-30	0-2	0-4	13-90
	14-60	15-35	5.0-20.0	7.9-9.0	15-30	1-5	16-32	13-90
57----------------	0-2	15-27	5.0-15.0	8.5-9.0	15-40	0-2	2-4	13-30
Skumpah	2-9	27-35	10.0-20.0	8.5-9.0	15-40	0-2	4-8	13-90
	9-26	18-35	10.0-20.0	7.9-9.0	15-40	1-5	8-16	13-90
	26-60	18-35	10.0-20.0	7.9-9.0	15-40	1-5	16-32	13-90
58----------------	0-2	15-27	5.0-15.0	8.5-9.0	15-40	0-2	4-8	13-30
Skumpah	2-9	27-35	10.0-20.0	8.5-9.6	15-40	0-2	8-16	13-90
	9-32	18-35	10.0-20.0	7.9-9.0	15-40	1-5	8-16	13-90
	32-60	18-35	10.0-20.0	7.9-9.0	15-40	1-5	16-32	13-90
59----------------	0-4	18-27	10.0-20.0	8.5-9.0	15-40	0-2	4-8	13-30
Skumpah	4-11	27-35	10.0-20.0	8.5-9.6	15-40	0-2	8-16	13-90
	11-60	15-35	5.0-20.0	7.9-9.0	15-40	1-5	16-32	13-90
60:								
Skumpah----------	0-4	18-27	10.0-20.0	8.5-9.0	15-40	0-2	4-8	13-30
	4-11	27-35	10.0-20.0	8.5-9.6	15-40	0-2	8-16	13-90
	11-60	15-35	5.0-20.0	7.9-9.0	15-40	1-5	16-32	13-90
Yenrab-----------	0-5	5-10	0.0-5.0	7.9-9.0	3-15	---	2-4	0-10
	5-60	2-5	0.0-5.0	7.9-9.0	3-15	---	2-8	5-13
61. Slickens and mine dumps								
62----------------	0-3	15-27	5.0-15.0	7.4-9.0	15-40	---	0-2	5-13
Spager	3-14	15-27	5.0-15.0	8.5-9.0	40-70	---	0-4	13-30
	14-20	---	---	---	---	---	---	---
	20-60	0-10	0.0-5.0	8.5-9.0	40-70	---	2-4	13-30

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
63---------------- Springmeyer	0-4	10-20	10.0-25.0	6.6-7.3	---	---	---	---
	4-14	10-20	10.0-25.0	6.6-7.3	---	---	---	---
	14-29	25-35	20.0-30.0	6.6-7.3	---	---	---	---
	29-42	10-18	8.0-15.0	6.6-7.3	---	---	---	---
	42-60	3-8	1.0-5.0	6.6-7.8	---	---	---	---
64---------------- Taylorsflat	0-4	18-27	10.0-20.0	7.9-8.4	3-20	---	0-2	0-10
	4-9	18-27	5.0-15.0	7.9-8.4	3-25	---	0-2	5-13
	9-60	18-27	5.0-15.0	8.5-9.0	15-40	---	2-16	13-30
65---------------- Taylorsflat	0-3	18-27	10.0-20.0	8.5-9.0	3-20	---	2-4	0-10
	3-9	18-27	5.0-15.0	8.5-9.6	3-25	---	2-4	5-13
	9-60	18-27	5.0-15.0	8.5-9.6	15-40	---	4-16	13-30
65A:								
Theriot----------	0-3	8-14	5.0-10.0	7.9-9.6	15-40	---	0-2	0-12
	3-14	5-14	3.0-8.0	7.9-9.6	20-40	---	0-4	0-12
	14-18	---	---	---	---	---	---	---
Rock outcrop.								
66---------------- Timpie	0-5	18-27	10.0-15.0	8.5-9.0	15-40	---	0-4	5-13
	5-14	18-27	10.0-15.0	8.5-9.6	15-40	---	4-8	13-50
	14-60	18-27	10.0-15.0	8.5-9.6	15-40	---	16-32	13-50
67---------------- Timpie	0-3	18-27	10.0-15.0	7.9-9.0	15-40	---	4-8	5-13
	3-21	18-27	10.0-15.0	8.5-9.0	15-40	---	8-16	13-50
	21-60	18-27	10.0-15.0	8.5-9.0	15-40	---	16-32	13-50
68:								
Timpie-----------	0-3	18-27	10.0-15.0	7.9-9.0	15-40	---	4-8	5-13
	3-21	18-27	10.0-15.0	8.5-9.0	15-40	---	8-16	13-50
	21-60	18-27	10.0-15.0	8.5-9.0	15-40	---	16-32	13-50
Tooele-----------	0-10	5-15	0.0-10.0	8.5-9.6	15-40	---	4-8	0-13
	10-60	5-15	0.0-10.0	8.5-9.6	15-40	---	8-16	13-50
69---------------- Tooele	0-3	5-15	0.0-10.0	7.9-9.0	15-40	---	2-4	0-13
	3-42	5-15	0.0-10.0	7.9-9.0	15-40	---	4-8	13-50
	42-60	2-10	0.0-5.0	7.9-9.0	15-40	---	8-16	13-50
70---------------- Tooele	0-10	5-15	0.0-10.0	8.5-9.6	15-40	---	4-8	0-13
	10-60	5-15	0.0-10.0	8.5-9.6	15-40	---	8-16	13-50
71---------------- Yeates Hollow	0-12	18-27	10.0-25.0	6.1-7.3	---	---	---	---
	12-44	35-40	15.0-20.0	6.1-7.3	---	---	---	---
	44-60	20-27	10.0-15.0	6.6-7.3	---	---	---	---
72---------------- Yeates Hollow	0-12	18-27	10.0-25.0	6.1-7.3	---	---	---	---
	12-38	35-40	15.0-20.0	6.1-7.3	---	---	---	---
	38-60	20-27	10.0-15.0	6.6-7.3	---	---	---	---
73---------------- Yenrab	0-15	2-5	0.0-5.0	7.9-9.0	3-15	---	0-2	0-10
	15-60	2-5	0.0-5.0	7.9-9.0	3-15	---	2-8	5-13
74:								
Yenrab-----------	0-15	2-5	0.0-5.0	7.9-9.0	3-15	---	0-2	0-10
	15-60	2-5	0.0-5.0	7.9-9.0	3-15	---	2-8	5-13
Badlands.								

TABLE 16.--CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	Pct	meq/100g	pH	Pct	Pct	mmhos/cm	
75:								
Yenrab----------	0-5	5-10	0.0-5.0	7.9-9.0	3-15	---	2-4	0-10
	5-60	2-5	0.0-5.0	7.9-9.0	3-15	---	2-8	5-13
Tooele----------	0-10	5-15	0.0-10.0	8.5-9.6	15-40	---	4-8	0-13
	10-60	5-15	0.0-10.0	8.5-9.6	15-40	---	8-16	13-50

TABLE 17.--SOIL FEATURES

Map symbol and soil name	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Kind		Uncoated steel	Concrete
	In		In				
1, 2----------- Abela	>60	---	---	---	Moderate----	High--------	Moderate.
3, 4:							
Amtoft----------	10-20	Hard----	---	---	Moderate----	High--------	Moderate.
Rock outcrop.							
5:							
Berent----------	>60	---	---	---	Low---------	High--------	Low.
Hiko Peak-------	>60	---	---	---	Low---------	High--------	Moderate.
6--------------- Birdow	>60	---	---	---	Moderate----	High--------	Moderate.
7--------------- Borvant	>60	---	10-20	Thick---	Moderate----	High--------	Moderate.
8--------------- Bramwell	>60	---	---	---	High--------	High--------	Moderate.
10:							
Broad-----------	20-40	Hard----	---	---	Moderate----	High--------	Moderate.
Reywat----------	10-20	Hard----	---	---	Moderate----	High--------	Low.
Rock outcrop.							
11:							
Checkett--------	14-20	Hard----	---	---	Low---------	High--------	Moderate.
Rock outcrop.							
12-------------- Cliffdown	>60	---	---	---	Low---------	High--------	Moderate.
13-------------- Cristo	20-40	Soft----	---	---	Moderate----	Moderate----	Low.
14, 14A:							
Dateman---------	20-40	Hard----	---	---	Moderate----	Moderate----	Low.
Podmor----------	20-40	Hard----	---	---	Moderate----	Moderate----	Low.
Rock outcrop.							
15-------------- Doyce	>60	---	---	---	Moderate----	High--------	Moderate.
16. Dune land							
17-------------- Dynal	>60	---	---	---	Low---------	High--------	High.
18:							
Dynal-----------	>60	---	---	---	Low---------	High--------	High.
Tooele----------	>60	---	---	---	Low---------	High--------	High.
19-------------- Erda	>60	---	---	---	Moderate----	High--------	Moderate.

TABLE 17.--SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Kind		Uncoated steel	Concrete
	In		In				
20:							
Flygare	>60	---	---	---	Moderate	Moderate	Moderate.
Dateman	20-40	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.							
21, 22 Hiko Peak	>60	---	---	---	Low	High	Moderate.
23:							
Hiko Peak	>60	---	---	---	Low	High	Moderate.
Checkett	14-20	Hard	---	---	Low	High	Moderate.
24:							
Hiko Peak	>60	---	---	---	Low	High	Moderate.
Taylorsflat	>60	---	---	---	Moderate	High	Moderate.
25 Hiko Springs	>60	---	---	---	Low	High	Moderate.
26 Holmes	>60	---	---	---	Moderate	Moderate	Low.
27:							
Izamatch	>60	---	---	---	Low	High	Low.
Cliffdown	>60	---	---	---	Low	High	High.
28:							
Izamatch	>60	---	---	---	Low	High	Low.
Cliffdown	>60	---	---	---	Low	High	Moderate.
29 Jericho	>60	---	14-20	Thin	Moderate	High	Moderate.
30 Junkett	>60	---	20-40	Thick	Low	High	Moderate.
31 Kanosh	>60	---	---	---	High	High	High.
32:							
Kanosh	>60	---	---	---	High	High	High.
Saltair	>60	---	---	---	High	High	High.
Logan	>60	---	---	---	High	High	Moderate.
33 Kapod	>60	---	---	---	Moderate	High	Moderate.
34, 35 Kapod	>60	---	---	---	Moderate	High	Low.
36 Kilburn	>60	---	---	---	Moderate	Moderate	Low.
37 Lakewin	>60	---	---	---	Moderate	High	Moderate.

TABLE 17.--SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Kind		Uncoated steel	Concrete
	In		In				
38:							
Lodar	10-20	Hard	---	---	Moderate	High	Moderate.
Lundy	10-20	Hard	---	---	Moderate	High	Moderate.
Rock outcrop.							
39 Logan	>60	---	---	---	High	High	Moderate.
40:							
Lundy	10-20	Hard	---	---	Moderate	High	Moderate.
Dateman	20-40	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.							
41 Manassa	>60	---	---	---	Moderate	High	Moderate.
42 Medburn	>60	---	---	---	Moderate	High	Moderate.
43 Medburn	>60	---	---	---	Moderate	High	High.
44. Pits							
45. Playas							
46:							
Playas.							
Saltair	>60	---	---	---	High	High	High.
46A:							
Podmor	20-40	Hard	---	---	Moderate	Moderate	Low.
Dateman	20-40	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.							
47:							
Podmor	20-40	Hard	---	---	Moderate	Moderate	Low.
Onaqui	10-20	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.							
48:							
Reywat	10-20	Hard	---	---	Moderate	High	Low.
Broad	20-40	Hard	---	---	Moderate	High	Moderate.
Rock outcrop.							
49:							
Ridd	20-40	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.							

TABLE 17.--SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Kind		Uncoated steel	Concrete
	In		In				
50:							
Ridd	20-40	Hard	---	---	Moderate	Moderate	Low.
Wasatch	>60	---	---	---	Low	Moderate	Low.
Rock outcrop.							
51:							
Rock outcrop.							
Lundy	10-20	Hard	---	---	Moderate	High	Moderate.
52. Salt flats							
53:							
Saltair	>60	---	---	---	High	High	High.
Playas.							
54 Scalade	>60	---	12-20	Thin	Moderate	High	Low.
55:							
Scalade	>60	---	12-20	Thin	Moderate	High	Low.
Jericho	>60	---	14-20	Thin	Moderate	High	Moderate.
Medburn	>60	---	---	---	Moderate	High	Moderate.
56, 57, 58, 59 Skumpah	>60	---	---	---	Low	High	High.
60:							
Skumpah	>60	---	---	---	Low	High	High.
Yenrab	>60	---	---	---	Low	High	Moderate.
61. Slickens and mine dumps							
62 Spager	>60	---	10-20	Thick	Moderate	High	Moderate.
63 Springmeyer	>60	---	---	---	Moderate	Moderate	Low.
64 Taylorsflat	>60	---	---	---	Moderate	High	Moderate.
65 Taylorsflat	>60	---	---	---	Moderate	High	High.
65A:							
Theriot	10-20	Hard	---	---	Low	High	Low.
Rock outcrop.							
66, 67 Timpie	>60	---	---	---	High	High	High.

TABLE 17.--SOIL FEATURES--Continued

Map symbol and soil name	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Kind		Uncoated steel	Concrete
	In		In				
68:							
Timpie----------	>60	---	---	---	High--------	High--------	High.
Tooele----------	>60	---	---	---	Low---------	High--------	High.
69, 70----------- Tooele	>60	---	---	---	Low---------	High--------	High.
71, 72----------- Yeates Hollow	>60	---	---	---	Moderate----	Moderate----	Low.
73--------------- Yenrab	>60	---	---	---	Low---------	High--------	Moderate.
74:							
Yenrab----------	>60	---	---	---	Low---------	High--------	Moderate.
Badlands.							
75:							
Yenrab----------	>60	---	---	---	Low---------	High--------	Moderate.
Tooele----------	>60	---	---	---	Low---------	High--------	High.

TABLE 18.--WATER FEATURES

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Water table depth	High water table: Kind of water table	High water table: Months
					Ft		
1, 2-------------- Abela	B	None--------	---	---	>6.0	---	---
3, 4:							
Amtoft-----------	D	None--------	---	---	>6.0	---	---
Rock outcrop.							
5:							
Berent-----------	A	None--------	---	---	>6.0	---	---
Hiko Peak--------	B	None--------	---	---	>6.0	---	---
6----------------- Birdow	B	Rare--------	---	---	>6.0	---	---
7----------------- Borvant	D	None--------	---	---	>6.0	---	---
8----------------- Bramwell	C	None--------	---	---	2.5-3.5	Apparent---	Mar-Jul
10:							
Broad------------	C	None--------	---	---	>6.0	---	---
Reywat-----------	D	None--------	---	---	>6.0	---	---
Rock outcrop.							
11:							
Checkett---------	D	None--------	---	---	>6.0	---	---
Rock outcrop.							
12---------------- Cliffdown	B	None--------	---	---	>6.0	---	---
13---------------- Cristo	C	None--------	---	---	>6.0	---	---
14, 14A:							
Dateman----------	C	None--------	---	---	>6.0	---	---
Podmor-----------	C	None--------	---	---	>6.0	---	---
Rock outcrop.							
15---------------- Doyce	B	None--------	---	---	>6.0	---	---
16. Dune land							
17---------------- Dynal	A	None--------	---	---	>6.0	---	---
18:							
Dynal------------	A	None--------	---	---	>6.0	---	---
Tooele-----------	B	None--------	---	---	>6.0	---	---

TABLE 18.--WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Water table depth	High water table: Kind of water table	High water table: Months
					Ft		
19----------------- Erda	B	None--------	---	---	>6.0	---	---
20:							
Flygare----------	B	None--------	---	---	>6.0	---	---
Dateman----------	C	None--------	---	---	>6.0	---	---
Rock outcrop.							
21, 22----------- Hiko Peak	B	None--------	---	---	>6.0	---	---
23:							
Hiko Peak--------	B	None--------	---	---	>6.0	---	---
Checkett---------	D	None--------	---	---	>6.0	---	---
24:							
Hiko Peak--------	B	None--------	---	---	>6.0	---	---
Taylorsflat------	B	None--------	---	---	>6.0	---	---
25----------------- Hiko Springs	B	None--------	---	---	>6.0	---	---
26----------------- Holmes	B	None--------	---	---	>6.0	---	---
27, 28:							
Izamatch---------	A	None--------	---	---	>6.0	---	---
Cliffdown--------	B	None--------	---	---	>6.0	---	---
29----------------- Jericho	D	None--------	---	---	>6.0	---	---
30----------------- Junkett	C	None--------	---	---	>6.0	---	---
31----------------- Kanosh	C	None--------	---	---	2.0-3.0	Apparent---	Mar-Jul
32:							
Kanosh-----------	C	None--------	---	---	2.0-3.0	Apparent---	Mar-Jul
Saltair----------	D	Frequent---	Long------	Mar-May	0.0-1.0	Apparent---	Mar-Jun
Logan------------	D	Frequent---	Long------	Mar-May	0.0-2.0	Apparent---	Mar-Jul
33, 34, 35------- Kapod	B	None--------	---	---	>6.0	---	---
36----------------- Kilburn	B	None--------	---	---	>6.0	---	---
37----------------- Lakewin	B	None--------	---	---	>6.0	---	---

TABLE 18.--WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Water table depth	High water table: Kind of water table	High water table: Months
					Ft		
38:							
Lodar-----------	D	None-------	---	---	>6.0	---	---
Lundy-----------	D	None-------	---	---	>6.0	---	---
Rock outcrop.							
39--------------- Logan	D	Frequent---	Long------	Mar-May	0.0-2.0	Apparent---	Mar-Jul
40:							
Lundy-----------	D	None-------	---	---	>6.0	---	---
Dateman---------	C	None-------	---	---	>6.0	---	---
Rock outcrop.							
41--------------- Manassa	C	None-------	---	---	>6.0	---	---
42, 43----------- Medburn	B	None-------	---	---	>6.0	---	---
44. Pits							
45. Playas							
46:							
Playas.							
Saltair---------	D	Frequent---	Long------	Mar-May	0.0-1.0	Apparent---	Mar-Jun
46A:							
Podmor----------	C	None-------	---	---	>6.0	---	---
Dateman---------	C	None-------	---	---	>6.0	---	---
Rock outcrop.							
47:							
Podmor----------	C	None-------	---	---	>6.0	---	---
Onaqui----------	D	None-------	---	---	>6.0	---	---
Rock outcrop.							
48:							
Reywat----------	D	None-------	---	---	>6.0	---	---
Broad-----------	C	None-------	---	---	>6.0	---	---
Rock outcrop.							
49:							
Ridd------------	C	None-------	---	---	>6.0	---	---
Rock outcrop.							

TABLE 18.--WATER FEATURES--Continued

Map symbol and soil name	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Water table depth	High water table: Kind of water table	High water table: Months
					Ft		
50:							
Ridd------------	C	None-------	---	---	>6.0	---	---
Wasatch---------	A	None-------	---	---	>6.0	---	---
Rock outcrop.							
51:							
Rock outcrop.							
Lundy-----------	D	None-------	---	---	>6.0	---	---
52. Salt flats							
53:							
Saltair---------	D	Frequent---	Long------	Mar-May	0.0-1.0	Apparent---	Mar-Jun
Playas.							
54--------------- Scalade	D	None-------	---	---	>6.0	---	---
55:							
Scalade---------	D	None-------	---	---	>6.0	---	---
Jericho---------	D	None-------	---	---	>6.0	---	---
Medburn---------	B	None-------	---	---	>6.0	---	---
56--------------- Skumpah	D	None-------	---	---	>6.0	---	---
57, 58----------- Skumpah	D	None-------	---	---	3.5-5.0	Apparent---	Mar-Jul
59--------------- Skumpah	D	None-------	---	---	>6.0	---	---
60:							
Skumpah---------	D	None-------	---	---	>6.0	---	---
Yenrab----------	A	None-------	---	---	>6.0	---	---
61. Slickens and mine dumps							
62--------------- Spager	D	None-------	---	---	>6.0	---	---
63--------------- Springmeyer	B	None-------	---	---	>6.0	---	---
64, 65----------- Taylorsflat	B	None-------	---	---	>6.0	---	---
65A:							
Theriot---------	D	None-------	---	---	>6.0	---	---
Rock outcrop.							

TABLE 18.--WATER FEATURES--Continued

Map symbol and soil name	Hydro- logic group	Flooding			High water table		
		Frequency	Duration	Months	Water table depth	Kind of water table	Months
					Ft		
66, 67----------- Timpie	B	None--------	---	---	>6.0	---	---
68:							
Timpie----------	B	None--------	---	---	>6.0	---	---
Tooele----------	B	None--------	---	---	>6.0	---	---
69, 70----------- Tooele	B	None--------	---	---	>6.0	---	---
71, 72----------- Yeates Hollow	C	None--------	---	---	>6.0	---	---
73--------------- Yenrab	A	None--------	---	---	>6.0	---	---
74:							
Yenrab----------	A	None--------	---	---	>6.0	---	---
Badlands.							
75:							
Yenrab----------	A	None--------	---	---	>6.0	---	---
Tooele----------	B	None--------	---	---	>6.0	---	---

TABLE 19.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Abela	Aridic Calcixerolls, loamy-skeletal, mixed, mesic
Amtoft	Lithic Xerollic Calciorthids, loamy-skeletal, carbonatic, mesic
Berent	Xeric Torripsamments, mixed, mesic
Birdow	Cumulic Haploxerolls, fine-loamy, mixed, mesic
Borvant	Petrocalcic Palexerolls, loamy-skeletal, carbonatic, mesic, shallow
Bramwell	Aquic Calciorthids, fine-silty, mixed, mesic
Broad	Calcic Argixerolls, loamy-skeletal, mixed, frigid
Checkett	Lithic Xeric Haplargids, loamy-skeletal, mixed, mesic
Cliffdown	Typic Torriorthents, loamy-skeletal, mixed (calcareous), mesic
Cristo	Pachic Argixerolls, fine, montmorillonitic, frigid
Dateman	Pachic Cryoborolls, loamy-skeletal, mixed
Doyce	Aridic Calcic Argixerolls, fine-loamy, mixed, mesic
Dynal	Typic Torripsamments, carbonatic, mesic
Erda	Aridic Calcixerolls, fine-silty, mixed, mesic
Flygare	Cryic Pachic Paleborolls, loamy-skeletal, mixed
Hiko Peak	Xerollic Calciorthids, loamy-skeletal, mixed, mesic
Hiko Springs	Typic Calciorthids, coarse-loamy, mixed, mesic
Holmes	Typic Argixerolls, loamy-skeletal, mixed, frigid
Izamatch	Typic Torriorthents, sandy-skeletal, mixed, mesic
Jericho	Xerollic Durorthids, loamy-skeletal, mixed, mesic, shallow
Junkett	Petrocalcic Xerollic Paleargids, fine-loamy, mixed, mesic
Kanosh	Aquic Calciorthids, coarse-loamy, mixed, mesic
Kapod	Calcic Argixerolls, loamy-skeletal, mixed, mesic
Kilburn	Typic Haploxerolls, loamy-skeletal, mixed, mesic
Lakewin	Calcic Haploxerolls, loamy-skeletal, mixed, mesic
Lodar	Lithic Calcixerolls, loamy-skeletal, carbonatic, mesic
Logan	Typic Calciaquolls, fine-silty, mesic
Lundy	Lithic Calcixerolls, loamy-skeletal, carbonatic, frigid
Manassa	Xeric Torriorthents, fine-silty, mixed (calcareous), mesic
Medburn	Xeric Torriorthents, coarse-loamy, mixed (calcareous), mesic
Onaqui	Lithic Haploborolls, loamy-skeletal, mixed
Podmor	Pachic Haploborolls, loamy-skeletal, mixed
Reywat	Lithic Argixerolls, loamy-skeletal, mixed, mesic
Ridd	Typic Argixerolls, loamy-skeletal, mixed, mesic
Saltair	Typic Salorthids, fine-silty, mixed, mesic
Scalade	Haploxerollic Durorthids, loamy, mixed, mesic, shallow
Skumpah	Typic Natrargids, fine-silty, mixed, mesic
Spager	Xerollic Paleorthids, loamy-skeletal, carbonatic, mesic, shallow
Springmeyer	Aridic Argixerolls, fine-loamy, mixed, mesic
Taylorsflat	Xerollic Calciorthids, fine-loamy, mixed, mesic
Theriot	Lithic Torriorthents, loamy-skeletal, carbonatic, mesic
Timpie	Typic Torriorthents, fine-silty, mixed (calcareous), mesic
Tooele	Typic Torriorthents, coarse-loamy, mixed (calcareous), mesic
Wasatch	Entic Haploxerolls, sandy, mixed, mesic
Yeates Hollow	Typic Argixerolls, clayey-skeletal, montmorillonitic, frigid
Yenrab	Typic Torripsamments, mixed, mesic

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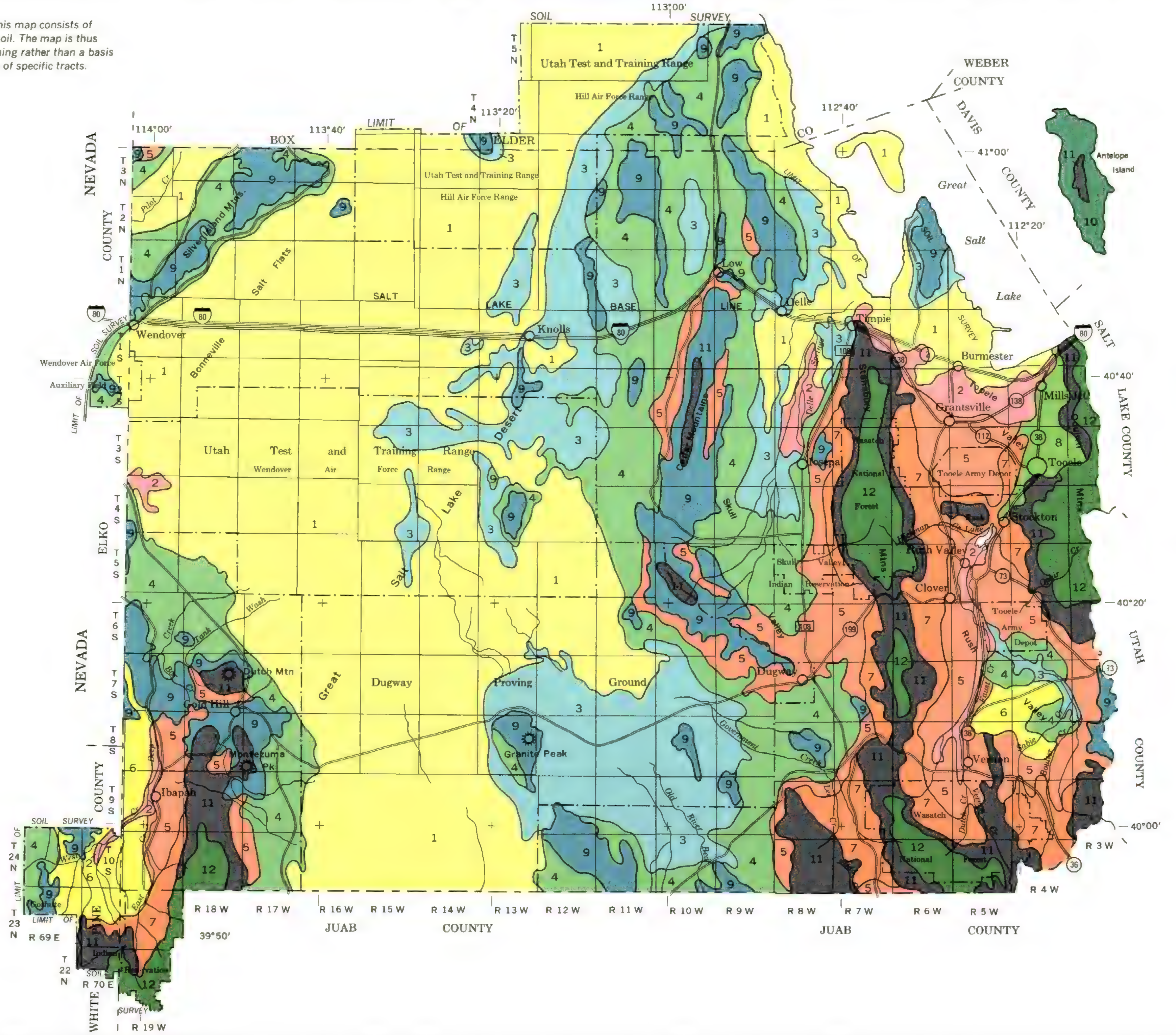
Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



SOIL LEGEND

VERY DEEP, POORLY DRAINED AND SOMEWHAT POORLY DRAINED, NEARLY LEVEL SOILS,PLAYAS AND SALT FLATS; ON LAKE PLAINS, FLOOD PLAINS, LOW LAKE TERRACES, AND STREAM TERRACES

- 1 PLAYAS-SALTAIR-SALT FLATS
- 2 KANOSH-BRAMWELL-LOGAN

SHALLOW AND VERY DEEP, WELL DRAINED AND SOMEWHAT EXCESSIVELY DRAINED, NEARLY LEVEL TO MODERATELY STEEP SOILS; ON LAKE TERRACES, FAN TERRACES, AND STABILIZED SAND DUNES

- 3 SKUMPAH-YENRAB-DYNAL
- 4 TOOELE-CLIFFDOWN-TIMPIE
- 5 HIKO PEAK-TAYLORSFLAT-MEDBURN
- 6 JERICHO-SCALADE-MEDBURN
- 7 BORVANT-ABELA-KAPOD
- 8 LAKEWIN-ERDA-KAPOD

SHALLOW TO VERY DEEP, WELL DRAINED TO EXCESSIVELY DRAINED, GENTLY SLOPING TO VERY STEEP SOILS AND ROCK OUTCROP; ON LAKE TERRACES, FAN TERRACES, HILLSIDES, AND MOUNTAINSIDES

- 9 AMTOFT-ROCK OUTCROP-CHECKETT
- 10 RIDD-KILBURN-WASATCH
- 11 LODAR-REYWAT-LUNDY
- 12 DATEMAN-PODMOR-ROCK OUTCROP

Compiled 1991

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE AND FOREST SERVICE
UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
BUREAU OF INDIAN AFFAIRS
FISH AND WILDLIFE SERVICE
UTAH AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEVADA AGRICULTURAL EXPERIMENT STATION
UTAH STATE UNIVERSITY AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP
TOOELE AREA, UTAH

TOOELE COUNTY AND PARTS OF BOX ELDER, DAVIS, AND JUAB COUNTIES, UTAH
ELKO AND WHITE PINE COUNTIES, NEVADA

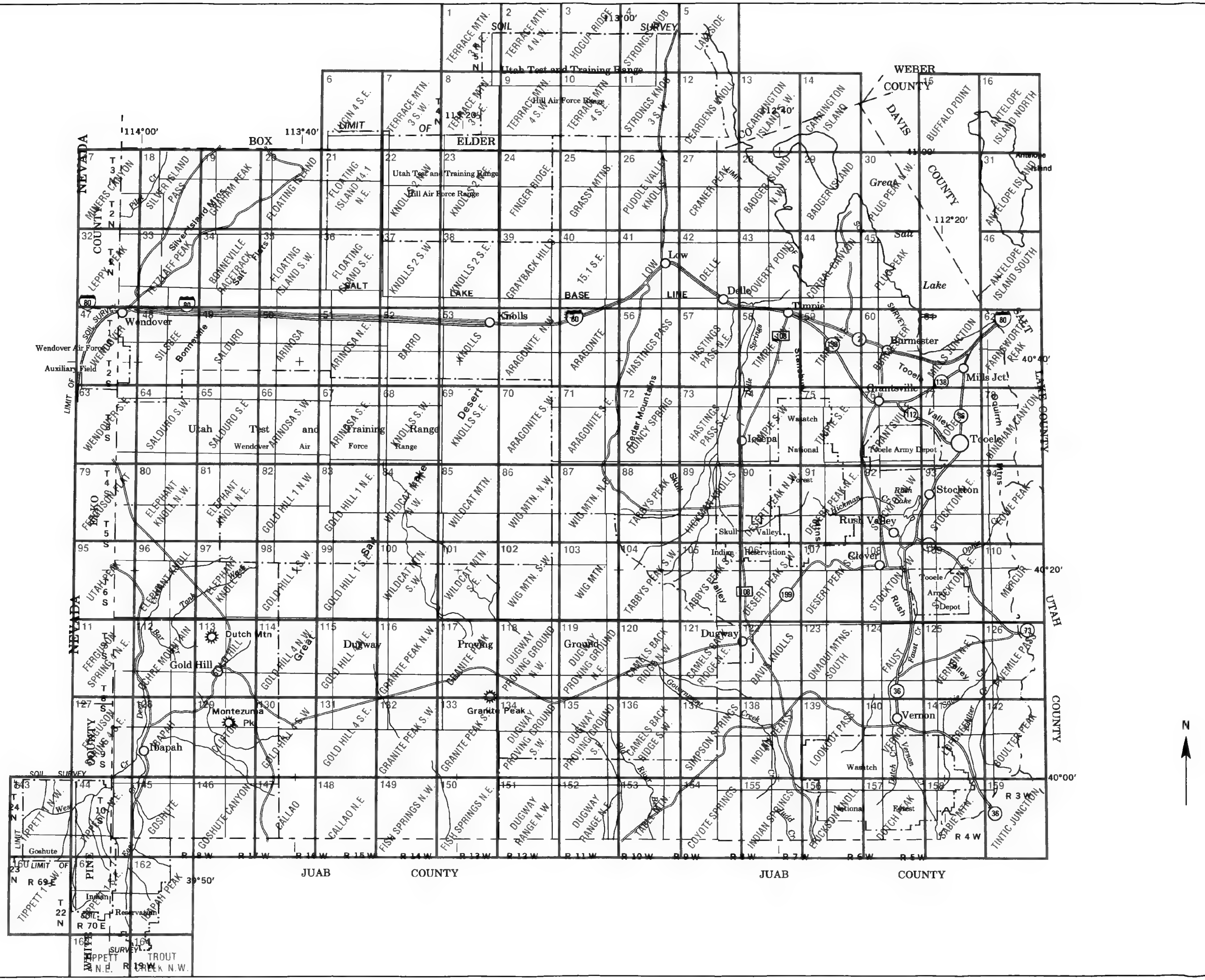
SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Scale 1:633,600

2 0 2 4 6 8 10 Miles

2 0 10 20 Km



INDEX TO MAP SHEETS
TOOELE AREA, UTAH

TOOELE COUNTY AND PARTS OF BOX ELDER, DAVIS, AND JUAB COUNTIES, UTAH
ELKO AND WHITE PINE COUNTIES, NEVADA

Scale 1:633,600

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

2 0 2 4 6 8 10 Miles
2 0 10 20 Km

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TOOELE AREA, UTAH

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BUREAU OF INDIAN AFFAIRS
UNITED STATES DEPARTMENT OF THE AIR FORCE
UNITED STATES DEPARTMENT OF THE ARMY
UNIVERSITY OF NEVADA AGRICULTURAL EXPERIMENT STATION
UTAH STATE UNIVERSITY AGRICULTURAL EXPERIMENT STATION

SOIL LEGEND

Field map symbols consist of combinations of 3 capital letters. The letter on the right end indicates the slope group that the soil map unit generally occurs in. The published symbol is to be a numeral only and assigned according to the alphabetical sequence of the mapping units. Permanent water bodies will be designated as "Wa" or will be identified by its proper name, such as "Great Salt Lake"

SYMBOL	NAME
1	Abela gravelly loam, 2 to 8 percent slopes
2	Abela very gravelly loam, 5 to 15 percent slopes
3	Amtoft, dry-Rock outcrop complex, 30 to 70 percent slopes
4	Amtoft-Rock outcrop complex, 30 to 70 percent slopes
5	Berent-Hiko Peak complex, 2 to 15 percent slopes
6	Birdow loam, 1 to 4 percent slopes
7	Borvant gravelly loam, 2 to 15 percent slopes
8	Bramwell silt loam, 0 to 2 percent slopes
9	Broad, moist-Dateman-Rock outcrop association, 30 to 70 percent slopes
10	Broad, moist-Reywat, moist-Rock outcrop association, 30 to 60 percent slopes
11	Checkett-Rock outcrop complex, 10 to 40 percent slopes
12	Cliffdown gravelly sandy loam, 2 to 15 percent slopes
13	Cristo loam, 10 to 60 percent slopes
14	Dateman-Podmor-Rock outcrop association, 30 to 70 percent slopes
15	Doyce loam, 2 to 8 percent slopes
16	Dune land
17	Dynal sand, 2 to 15 percent slopes
18	Dynal-Tooele, saline, complex, 0 to 15 percent slopes
19	Erda silt loam, 1 to 5 percent slopes
20	Flygare-Dateman-Rock outcrop association, 30 to 70 percent slopes
21	Hiko Peak gravelly loam, 2 to 15 prcent slopes
22	Hiko Peak very stony loam, 2 to 8 percent slopes
23	Hiko Peak-Checkett complex, 2 to 40 percent slopes
24	Hiko Peak-Taylorsflat complex, 1 to 15 percent slopes
25	Hiko Springs gravelly sandy loam, 2 to 4 percent slopes
26	Holmes very stony sandy loam, 5 to 15 percent slopes
27	Izamatch-Cliffdown, alkali, complex, 2 to 8 percent slopes
28	Izamatch alkali-Cliffdown complex, 2 to 15 percent slopes
29	Jericho gravelly sandy loam, dry, 2 to 8 percent slopes
30	Junkett gravelly loam, 2 to 5 percent slopes
31	Kanosh loam, 0 to 2 percent slopes
32	Kanosh-Saltair-Logan complex, 0 to 2 percent slopes
33	Kapod gravelly loam, 2 to 10 percent slopes
34	Kapod stony loam, 5 to 30 pecent slopes
35	Kapod very cobbly loam, 5 to 30 percent slopes
36	Kilburn gravelly sandy loam, 2 to 10 percent slopes
37	Lakewin gravelly loam, 1 to 5 percent slopes
38	Lodar-Lundy-Rock outcrop association, 30 to 60 percent slopes
39	Logan silt loam, 0 to 1 percent slopes
40	Lundy-Dateman-Rock outcrop asssociation, 30 to 70 percent slopes
41	Manassa silt loam, 0 to 3 percent slopes
42	Medburn fine sandy loam, 2 to 8 percent slopes
43	Medburn fine sandy loam, saline, 2 to 4 percent slopes
44	Pits
45	Playas
46	Playas-Saltair complex, 0 to 1 percent slopes
47	Podmor-Onaqui-Rock outcrop association, 20 to 60 percent slopes
48	Reywat-Broad-Rock outcrop association, 30 to 60 percent slopes
49	Ridd-Rock outcrop complex, 30 to 70 percent slopes
50	Ridd-Wasatch-Rock outcrop association, 6 to 30 percent slopes
51	Rock outcrop-Lundy complex, 30 to 60 percent slopes
52	Salt flats
53	Saltair-Playas complex, 0 to 1 percent slopes
54	Scalade very fine sandy loam, moist, 2 to 5 percent slopes
55	Scalade-Jericho-Medburn association, 2 to 15 percent slopes
56	Skumpah silt loam, 0 to 2 percent slopes
57	Skumpah silt loam, wet substratum, 0 to 1 percent slopes
58	Skumpah silt loam, wet substratum, saline, 0 to 1 percent slopes
59	Skumpah silt loam, saline, 0 to 2 percent slopes
60	Skumpah-Yenrab complex, saline, 0 to 15 percent slopes
61	Slickens and mine dumps
62	Spager gravelly loam, 2 to 15 percent slopes
63	Springmeyer gravelly sandy loam, 3 to 7 percent slopes
64	Taylorsflat loam, 1 to 5 percent slopes
65	Taylorsflat loam, saline, 0 to 3 percent slopes
65A	Theriot-Rock outcrop complex, 15 to 70 percent slopes
66	Timpie silt loam, 0 to 3 percent slopes
67	Timpie silt loam, saline, 0 to 4 percent slopes
68	Timpie-Tooele complex, saline, 0 to 5 percent slopes
69	Tooele fine sandy loam, 0 to 5 percent slopes
70	Tooele fine sandy loam, saline, 0 to 5 percent slopes
71	Yeates Hollow cobbly loam, 6 to 20 percent slopes
72	Yeates Hollow very cobbly loam, 6 to 40 percent slopes
73	Yenrab fine sand, 2 to 15 percent slopes
74	Yenrab-Badlands complex, 2 to 15 percent slopes
75	Yenrab-Tooele complex, saline, 0 to 15 percent slopes
W	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline

ROADS

- Divided (median shown if scale permits)

ROAD EMBLEM & DESIGNATIONS

- Interstate (173)

DAMS

- Large (to scale)

WATER FEATURES

DRAINAGE

- Perennial, single line
- Intermittent
- Drainage end
- Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial (water, w)
- Intermittent (int, i)

MISCELLANEOUS WATER FEATURES

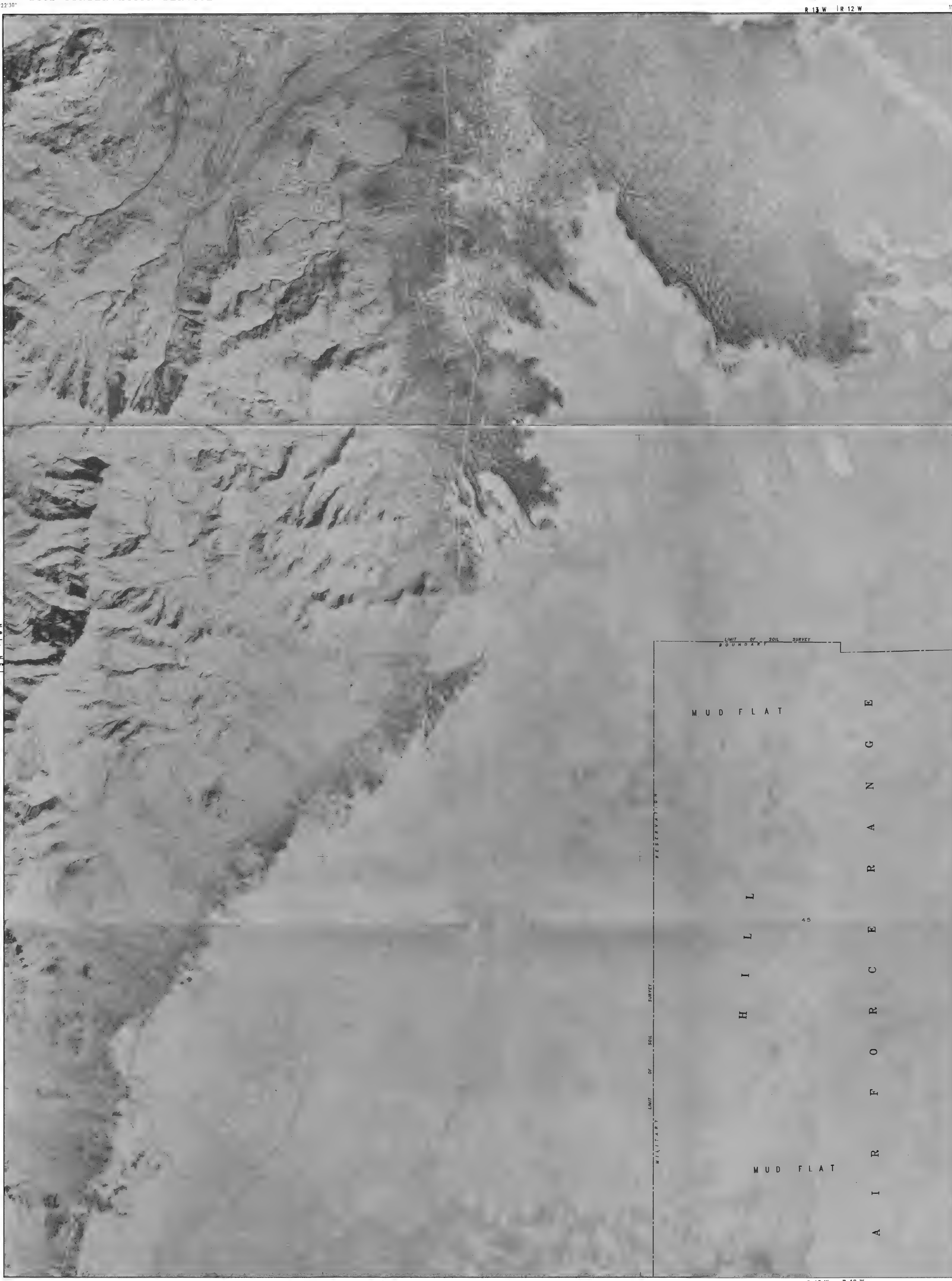
- Spring

SPECIAL SYMBOLS FOR SOIL SURVEY

- SOIL DELINEATIONS AND SYMBOLS (11, 71)

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 1
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 1

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

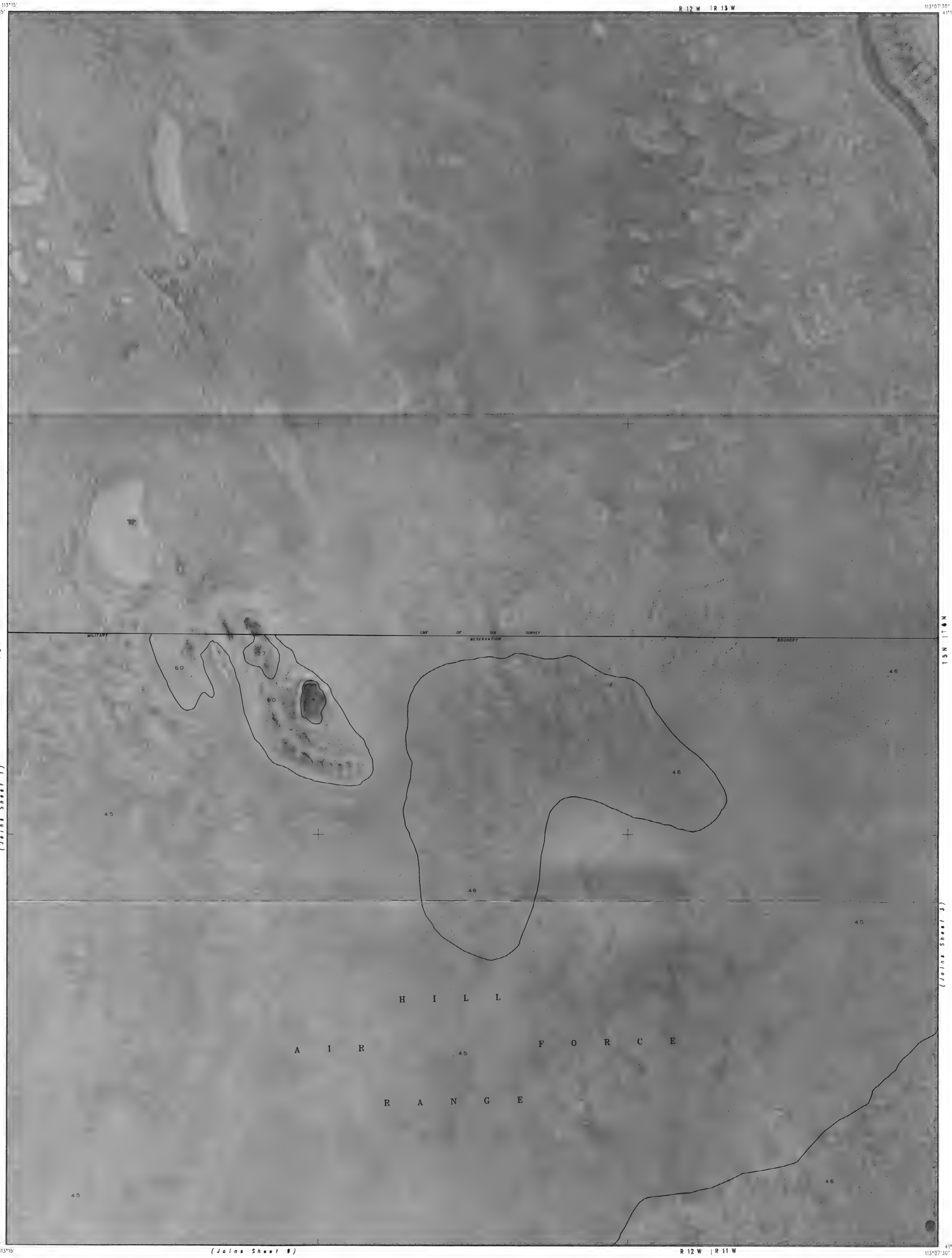
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 1 OF 164

Q0908 – Desert Peak

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 2
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 2

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

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SHEET NO. 2 OF 164

Q0909 – Round Mountain Nw

TOOELE AREA, UTAH AND NEVADA NO. 3

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

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TOOELE AREA, UTAH AND NEVADA NO. 4

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1 1/2 0 1 MILE

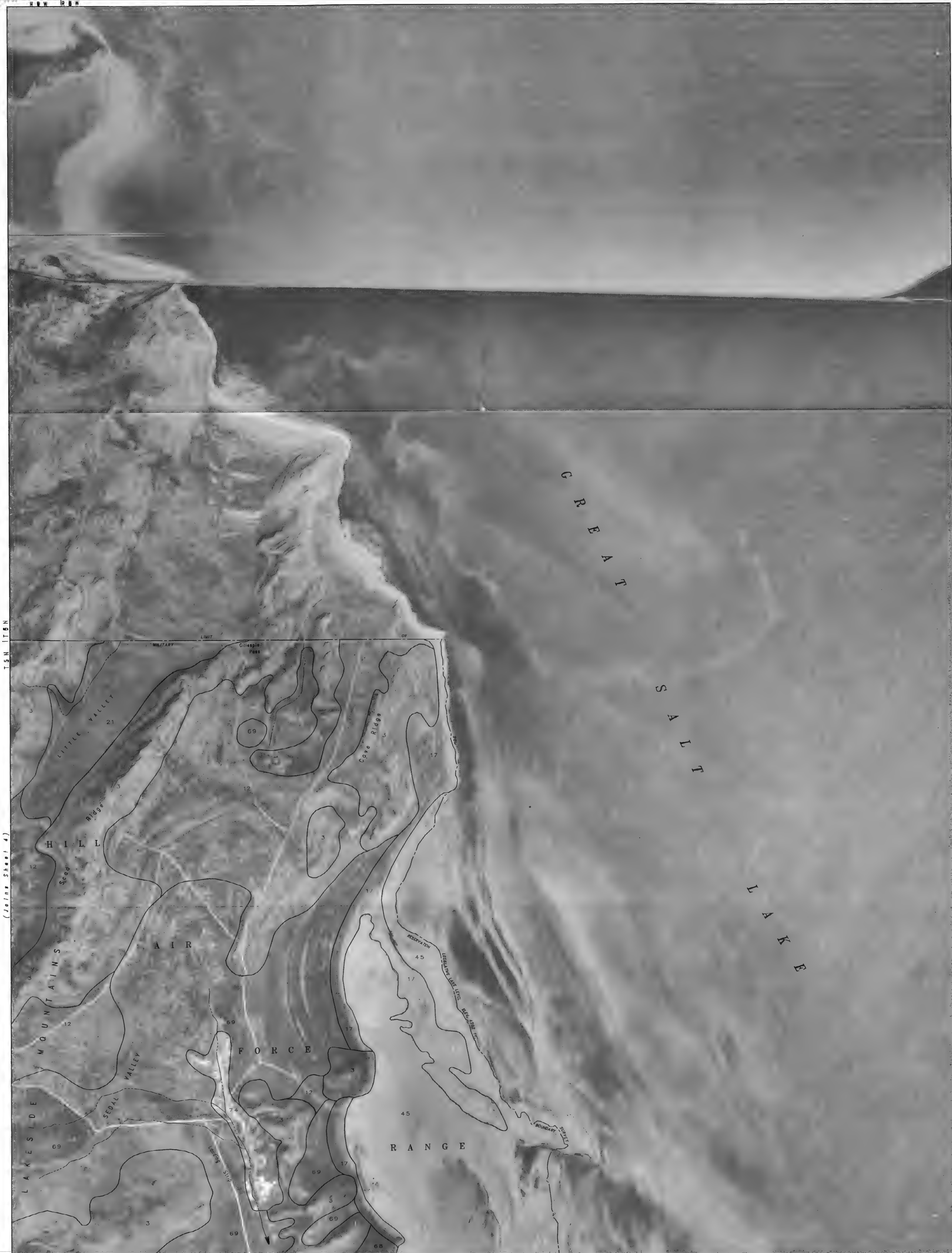
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q0911 - Strongs Knob



TOOELE AREA, UTAH AND NEVADA NO. 5

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 5 OF 164

Q0912 – Lakeside

TOOELE AREA, UTAH AND NEVADA NO. 6

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

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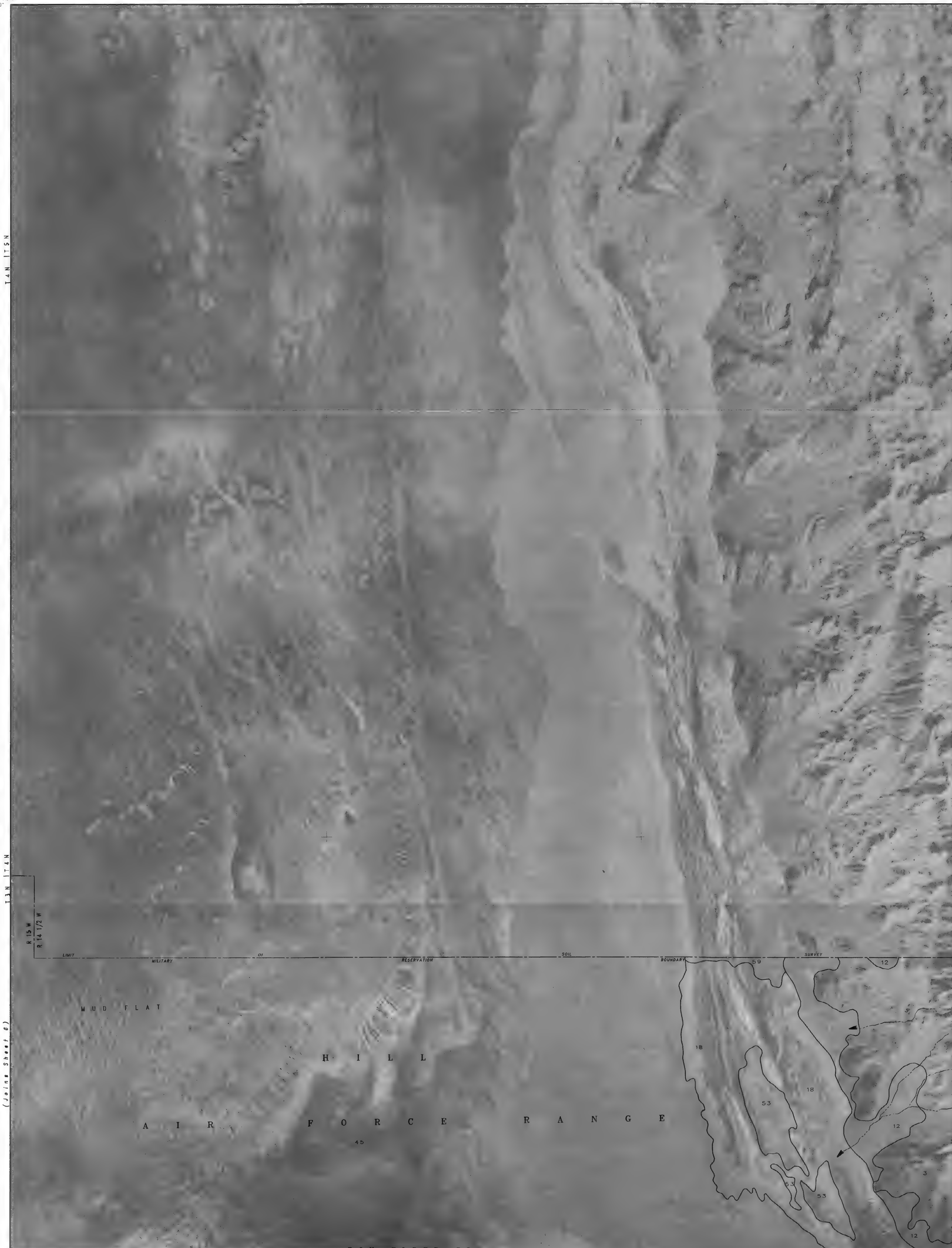
Q1006 – Lucin 4 Se

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 7
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 7

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

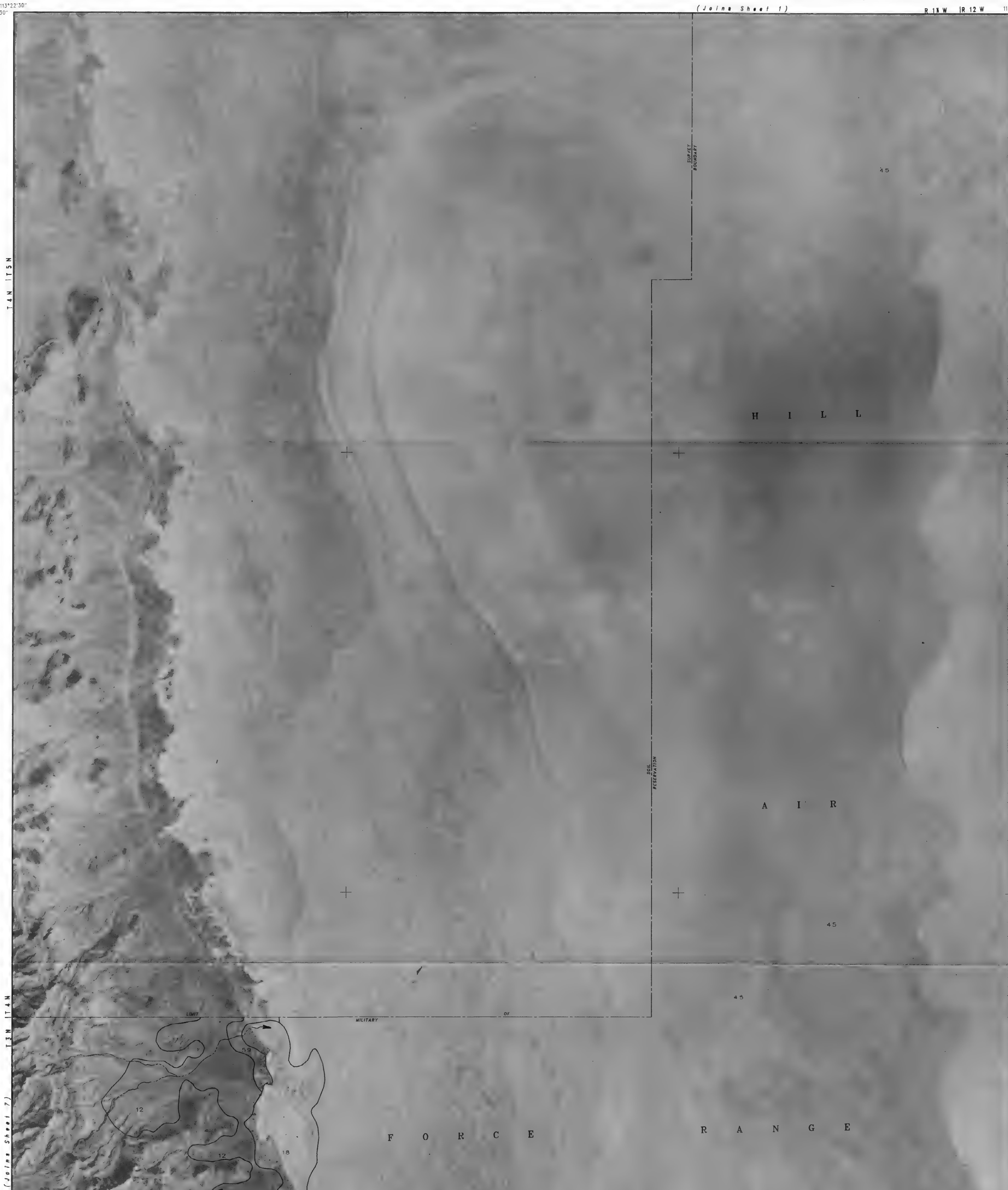
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 7 OF 164

Q1007 - Big Pass



TOOELE AREA, UTAH AND NEVADA NO. 8

1 MILE 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

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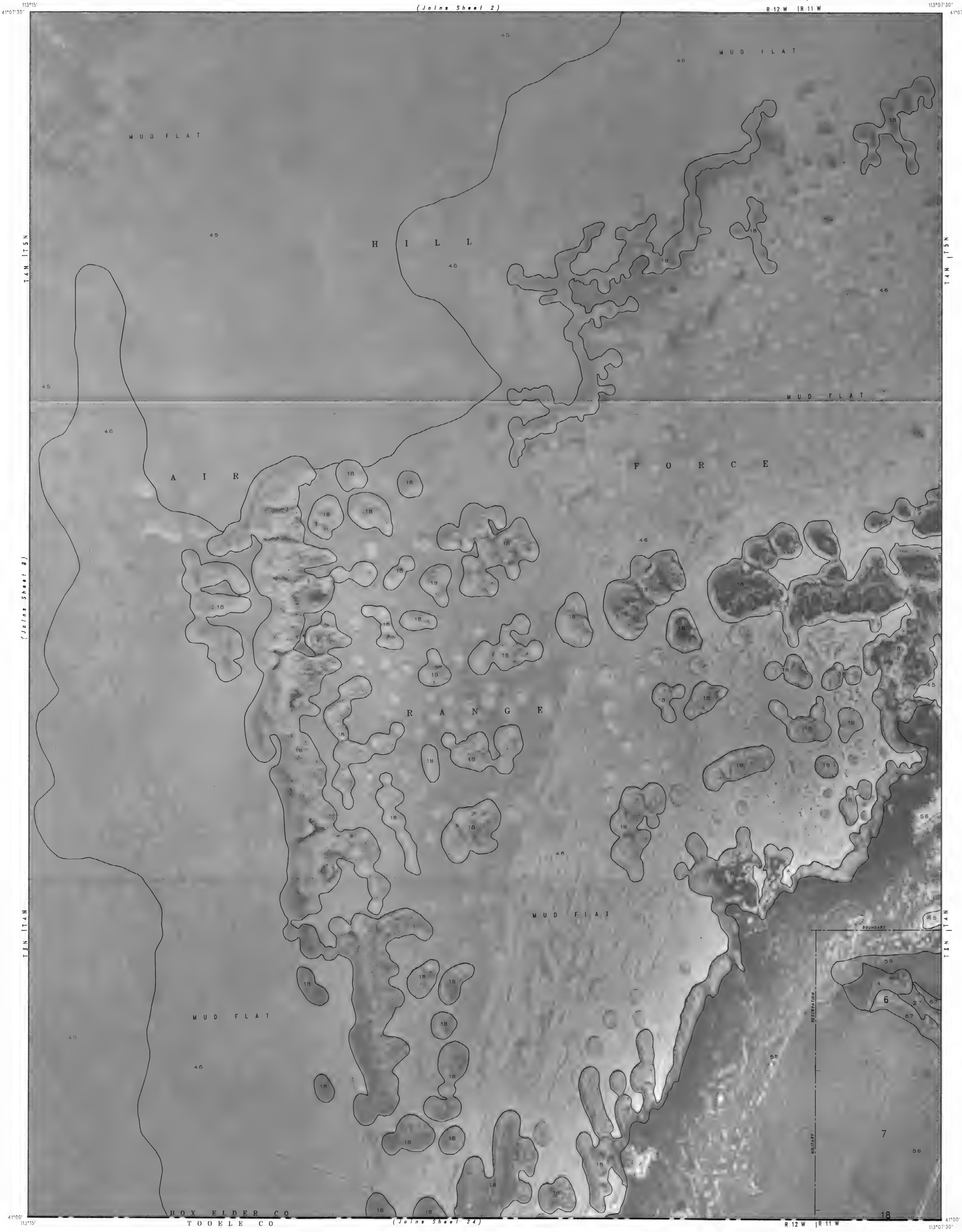
Q1008 – Keller Well



TOOELE AREA, UTAH AND NEVADA NO. 9

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

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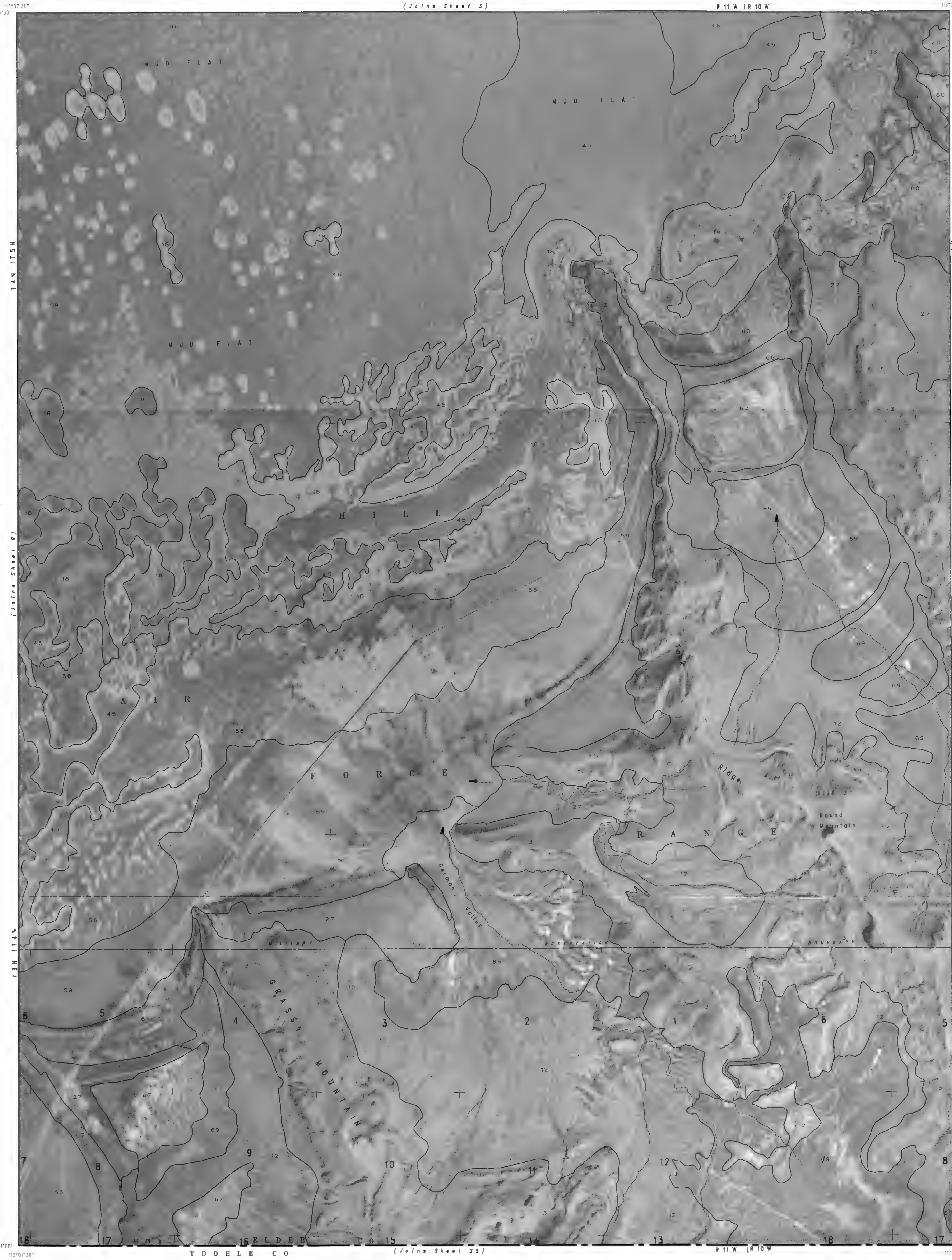

TOOELE AREA, UTAH AND NEVADA NO. 10

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

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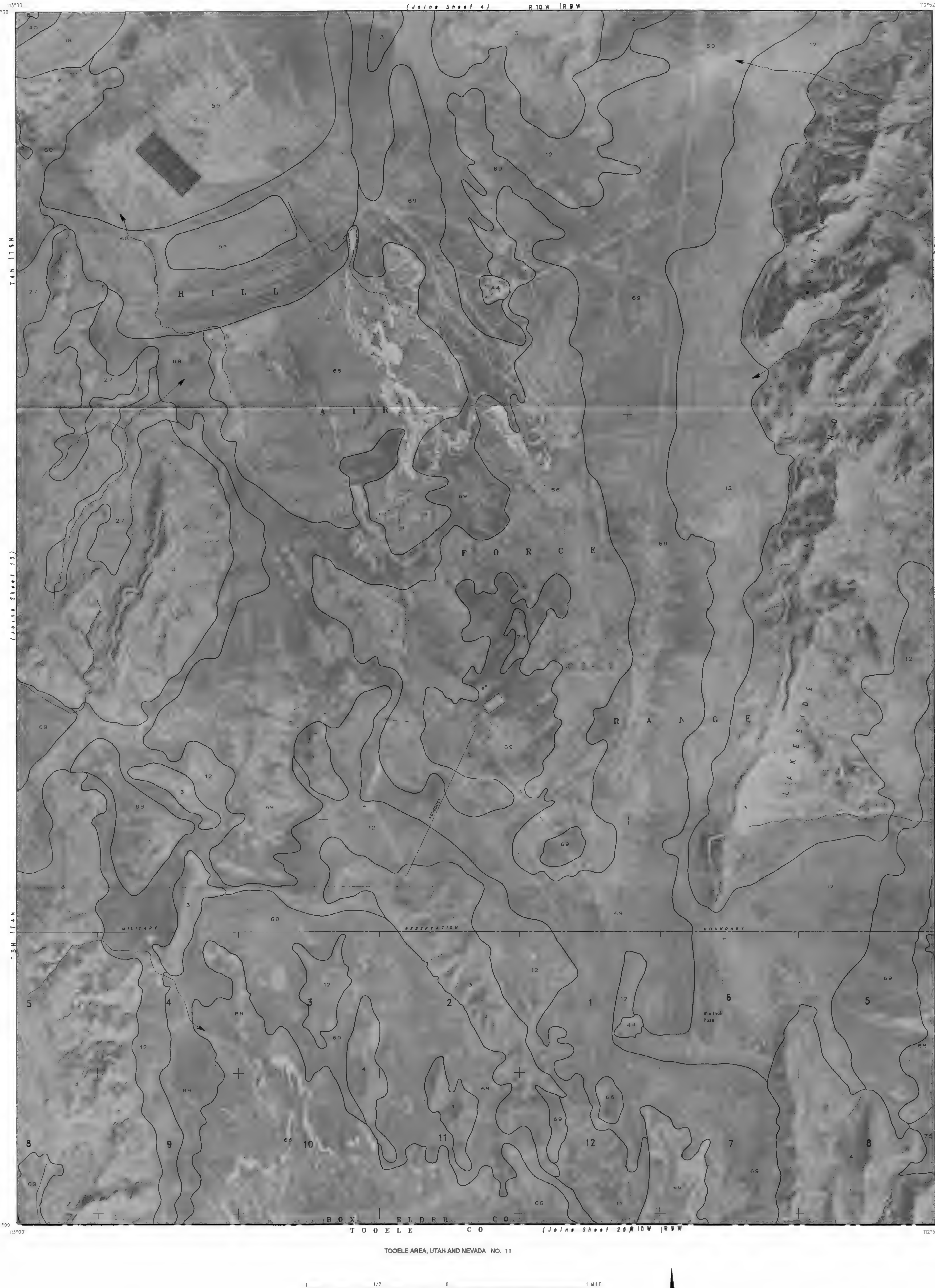
SHEET NO. 10 OF 164

Q1010 – Round Mountain



TOOELE AREA, UTAH AND NEVADA NO. 11

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

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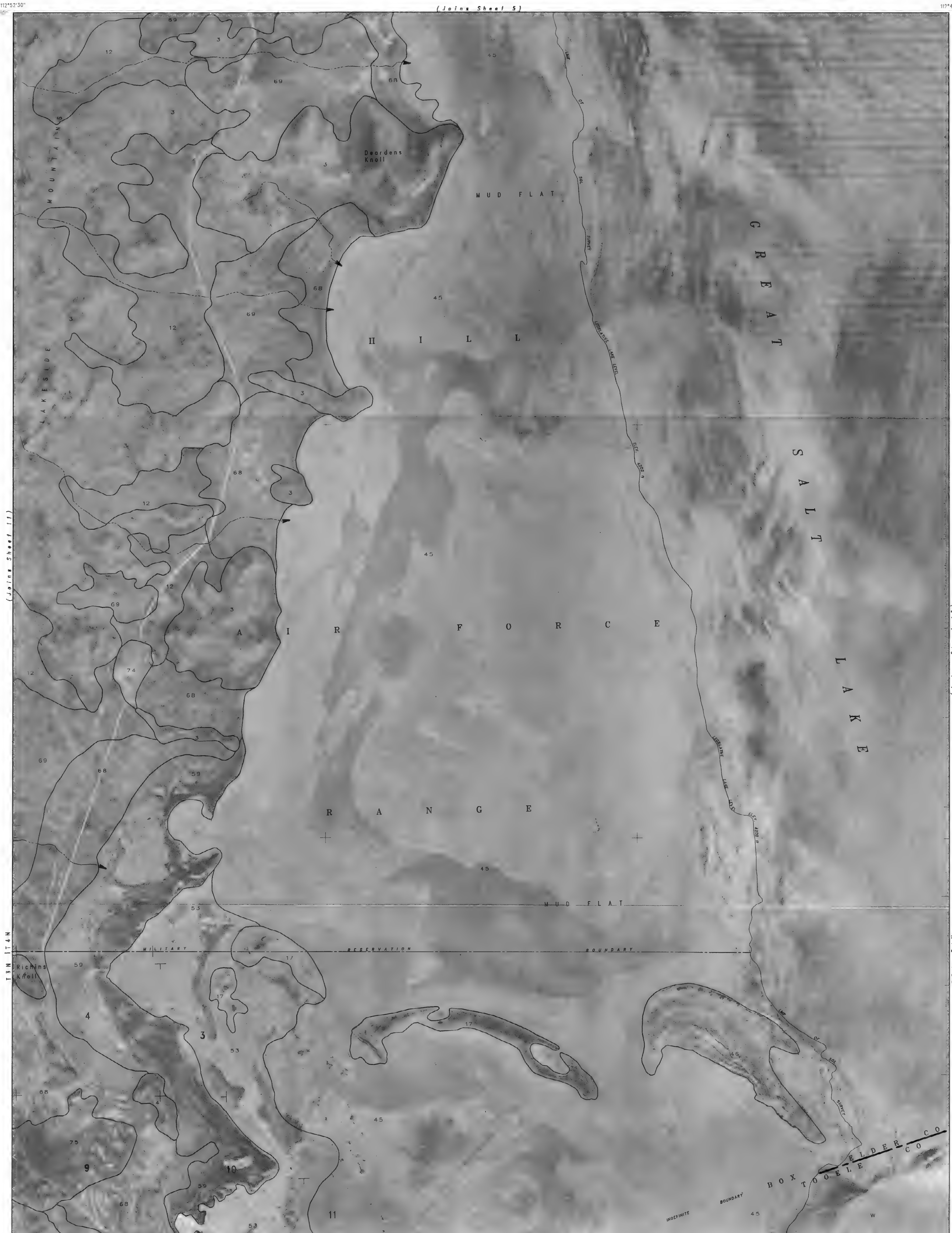
112°52'30"
41°07'30"
(Joins Sheet 5)
112°45'
41°07'30"



(Joins Sheet 11)
(Joins Sheet 13)
T4N
T3N
T4N
T3N

41°00'
112°52'30"
TOOELE CO
(Joins Sheet 27)
41°00'
112°45'

TOOELE AREA, UTAH AND NEVADA NO. 12

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

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112°45' 41°07'30" 112°37'30" 41°07'30"

41°00' 112°45' 41°00' 112°37'30"

(Joins Sheet 26)

TOOELE AREA, UTAH AND NEVADA NO. 13

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

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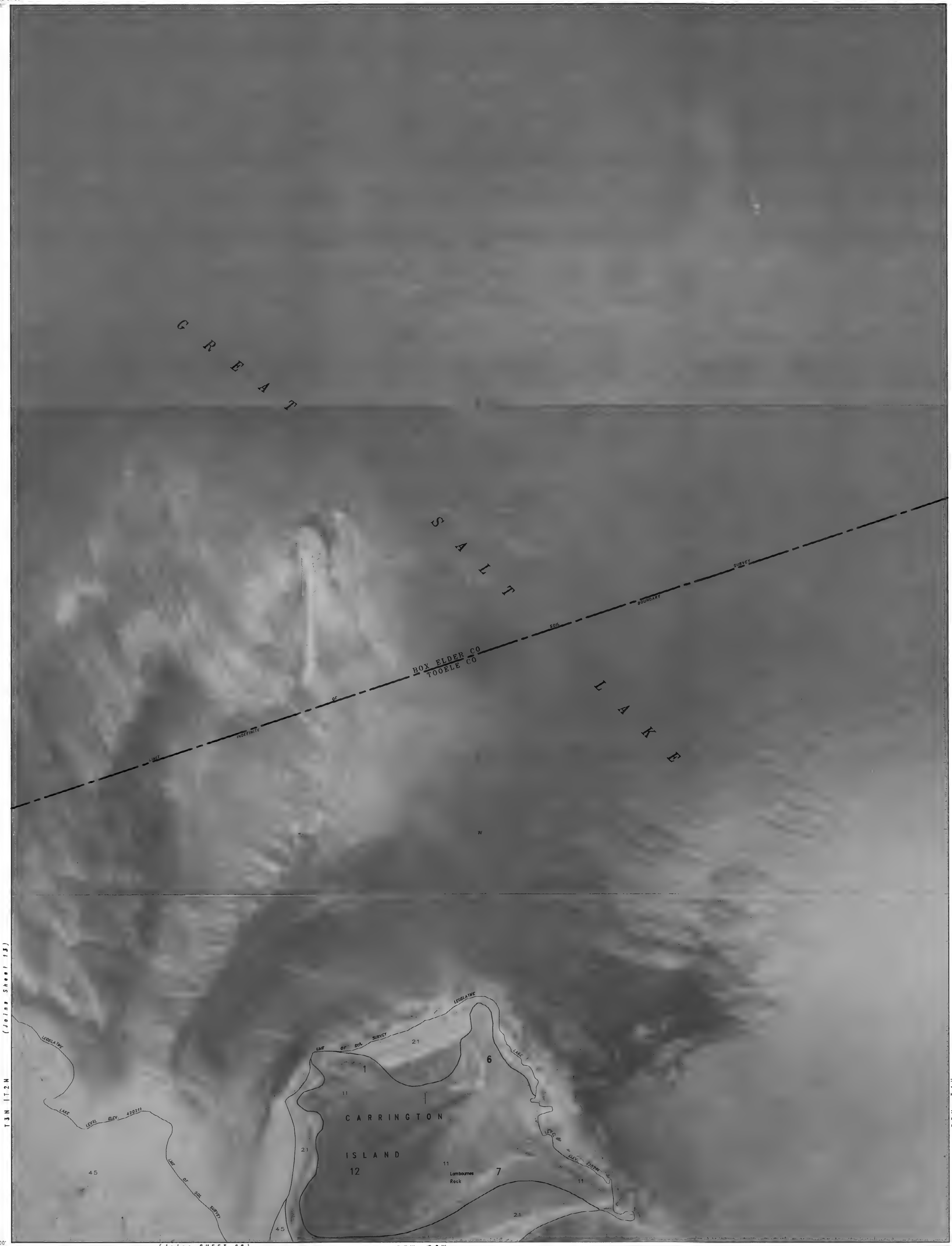
N



TOOELE AREA, UTAH AND NEVADA NO. 14

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

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SHEET NO. 14 OF 164
Q1014 - Carrington Island

TOOELE AREA, UTAH AND NEVADA NO. 15

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

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N

SHEET NO. 15 OF 164
Q1016 – Buffalo Point

TOOELE AREA, UTAH AND NEVADA NO. 16

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

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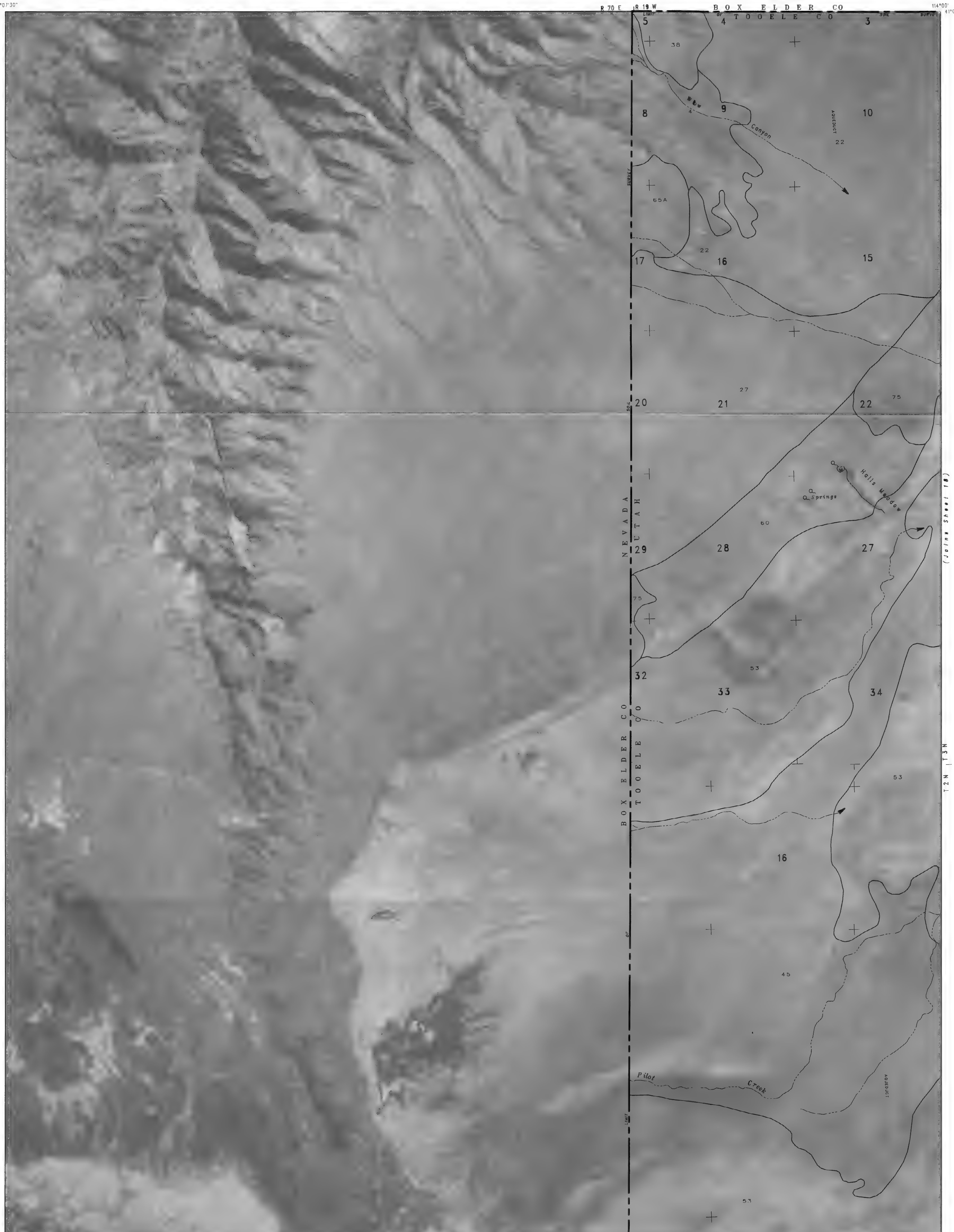
Q1017 – Antelope Island North



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1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 17 OF 164

Q1102 – Miners Canyon

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TOOELE AREA, UTAH AND NEVADA NO. 18

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

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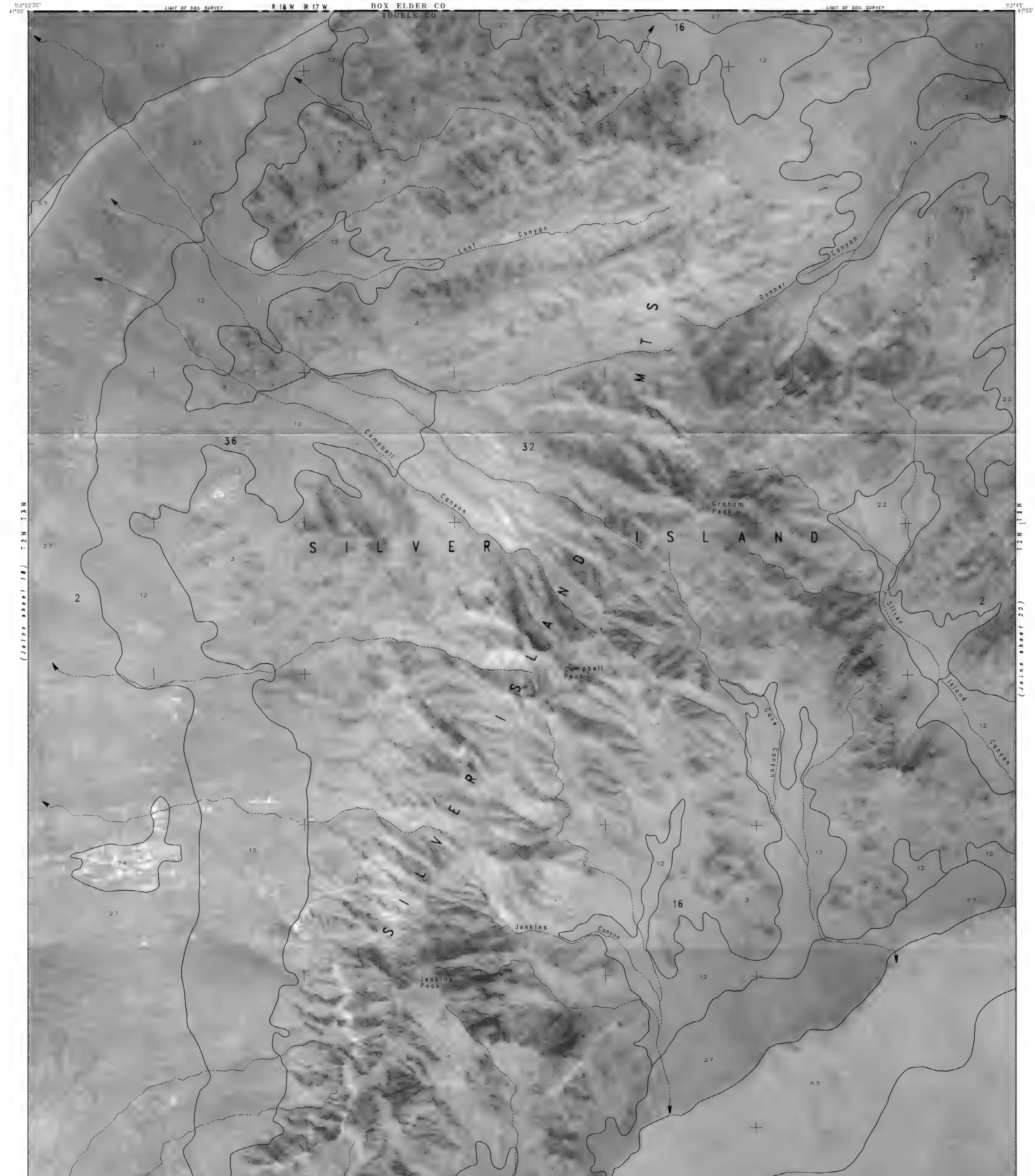
N

Q1103 – Silver Island Pass



TOOELE AREA, UTAH AND NEVADA NO. 19

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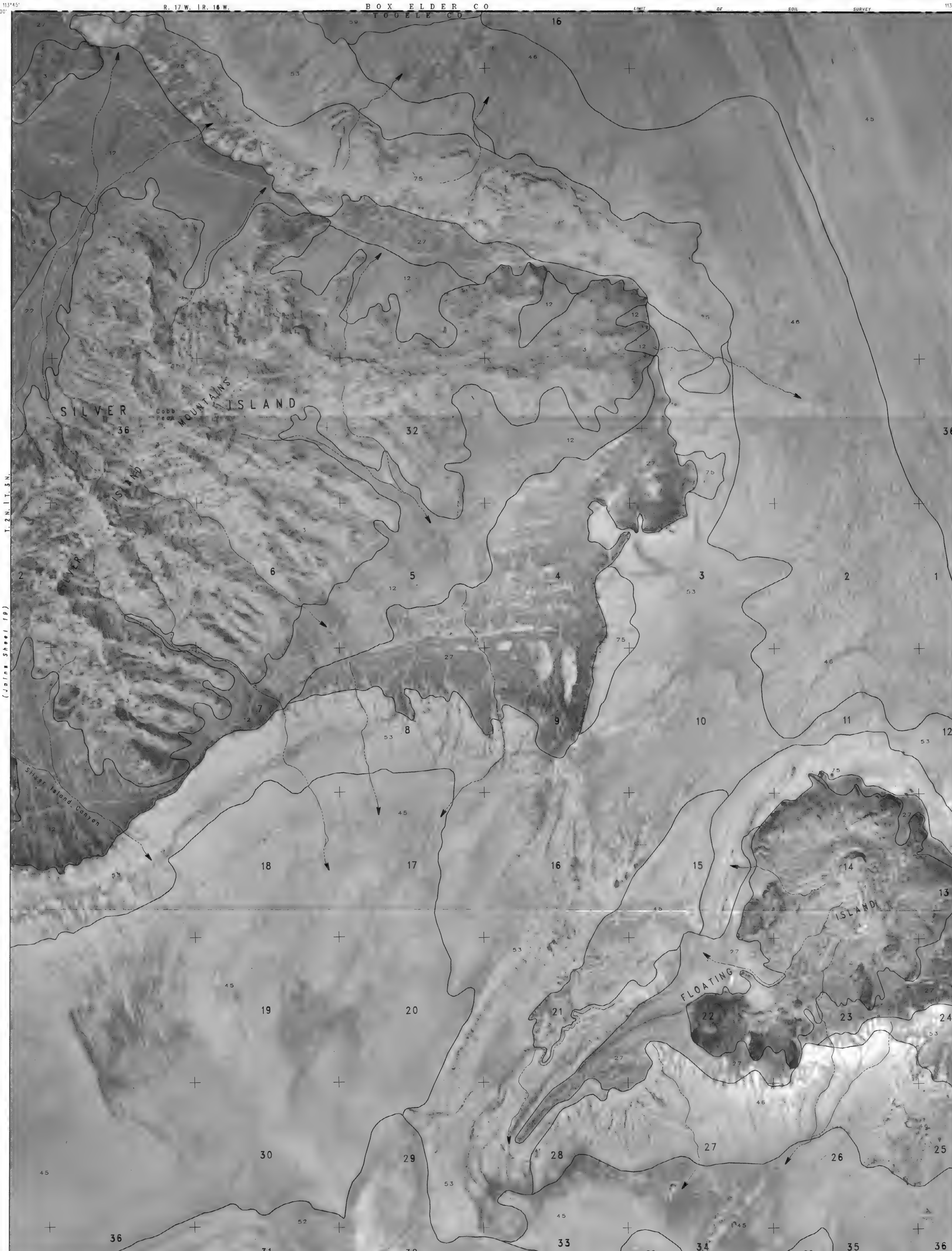
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

Q1104 - Graham Peak



TOOELE AREA, UTAH AND NEVADA NO. 20

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

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This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 21 OF 164

Q1106 - Floating Island Ne

TOOELE AREA, UTAH AND NEVADA NO. 22

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 22 OF 164

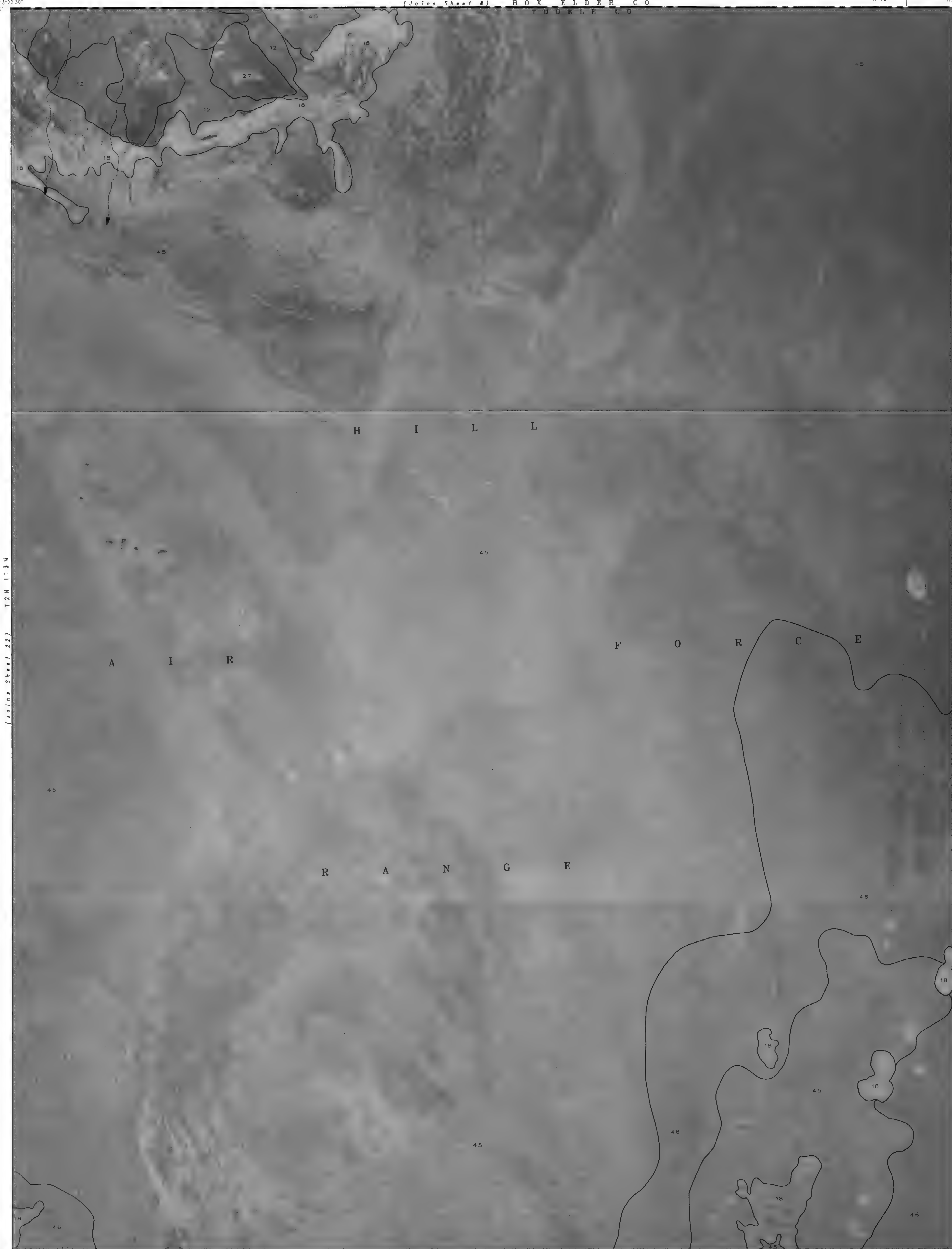
Q1107 - Knolls 2 Nw

R 14 W 113°22'30" 41°00'

(Joins Sheet 8)

R 13 W R 12 W 113°15' 41°00'

T2N | T3N (Joins Sheet 22)



T2N | T3N (Joins Sheet 24)

40°52'30" 113°22'30" R 14 W | R13 W

(Joins Sheet 38)

R 13 W | R 12 W 113°15' 40°52'30"

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

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SHEET NO. 23 OF 164
Q1108 - Knolls 2 Ne

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 24

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

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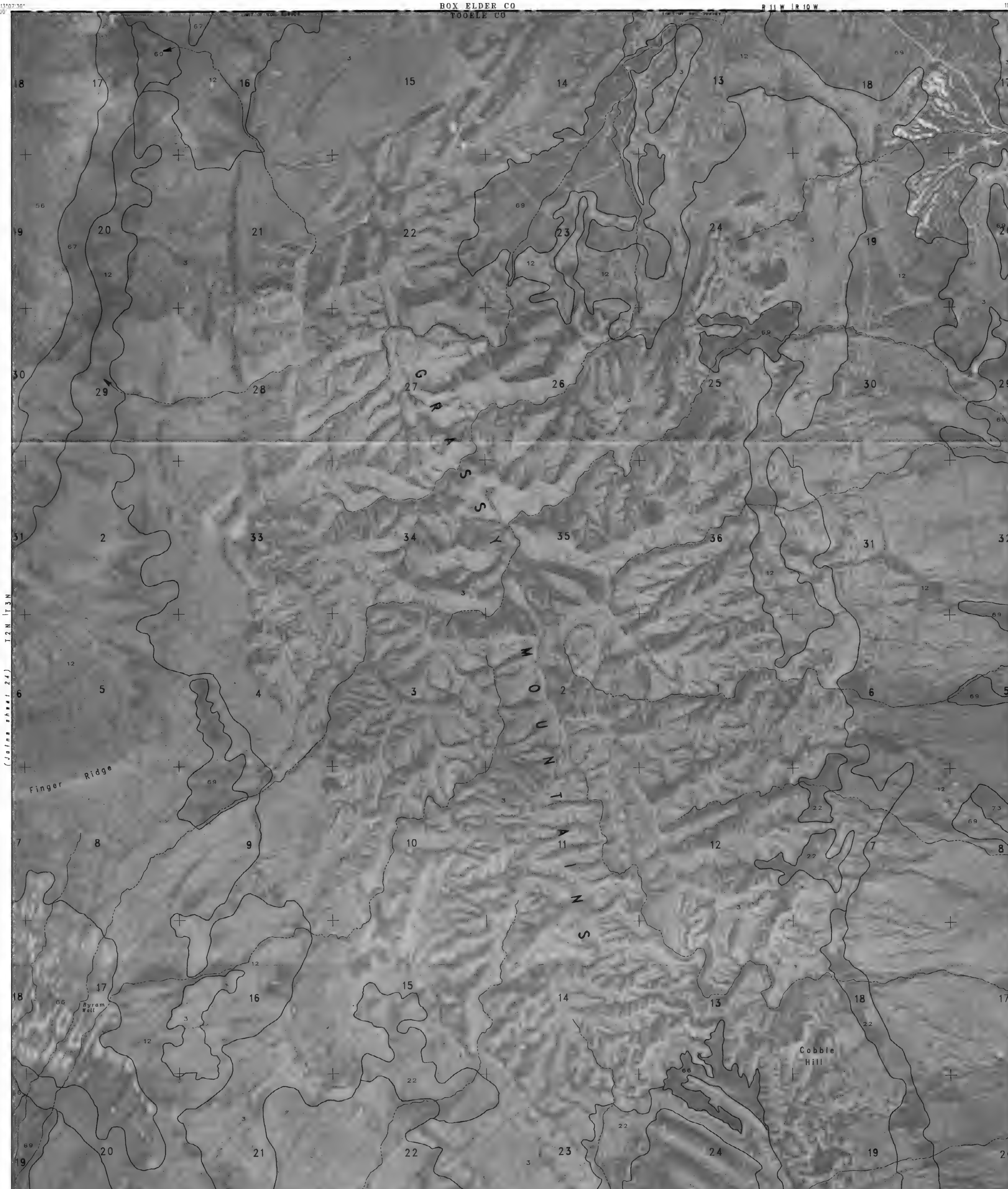
Q1109 - Finger Ridge

113°07'30"
41°00'

BOX ELDER CO
TOOELE CO

R 11 W | R 10 W

113°00'
41°00'



40°52'30"
113°07'30"

(Joins sheet 40)

R 11 W | R 10 W

40°52'30"
113°00'

TOOELE AREA, UTAH AND NEVADA NO. 25

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

TOOELE AREA, UTAH AND NEVADA NO. 26

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

Q1111 – Puddle Valley Knolls

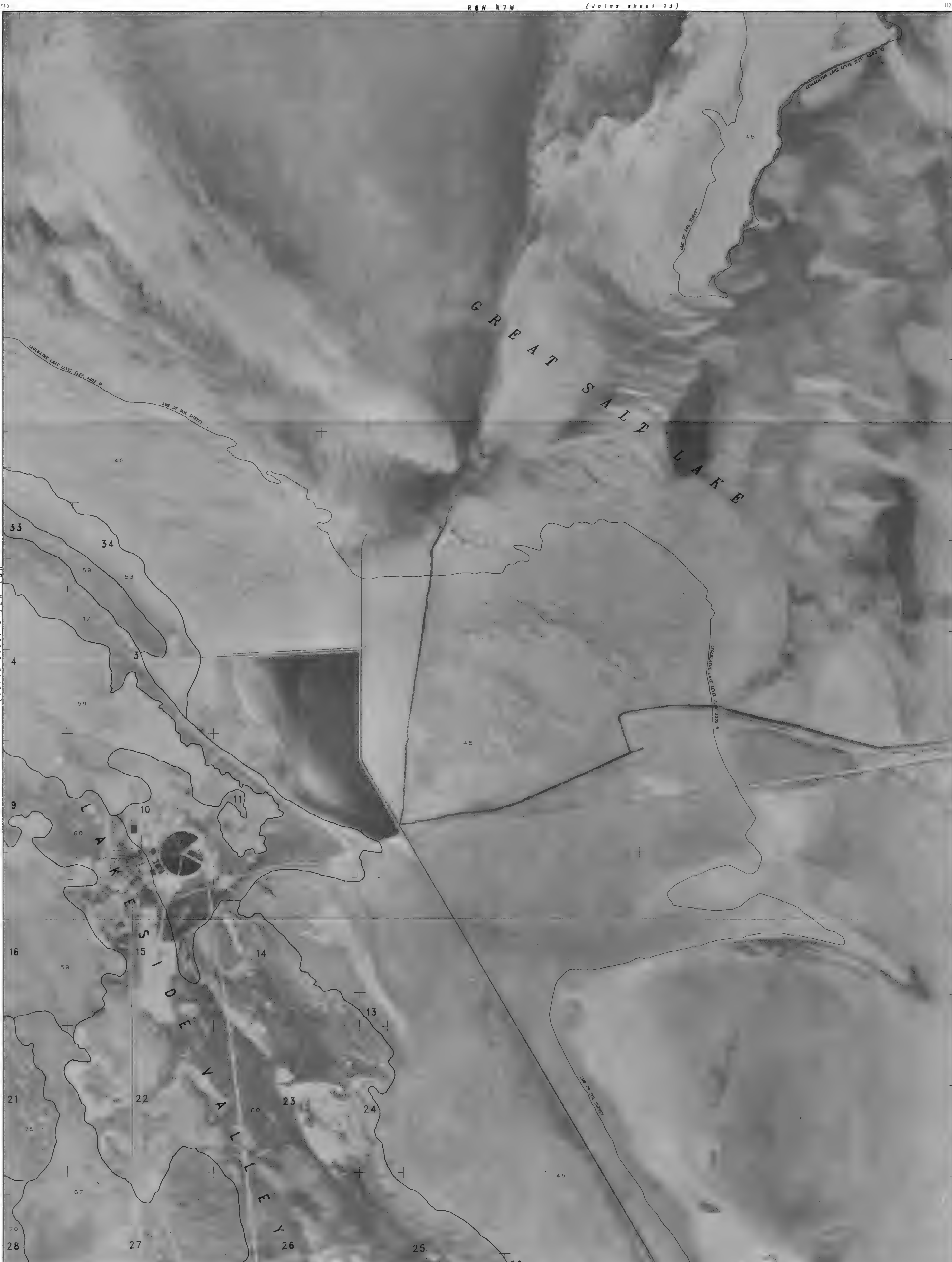
TOOELE AREA, UTAH AND NEVADA NO. 27

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Scale 1:24,000

SHEET NO. 27 OF 164

Q1112 – Craner Peak



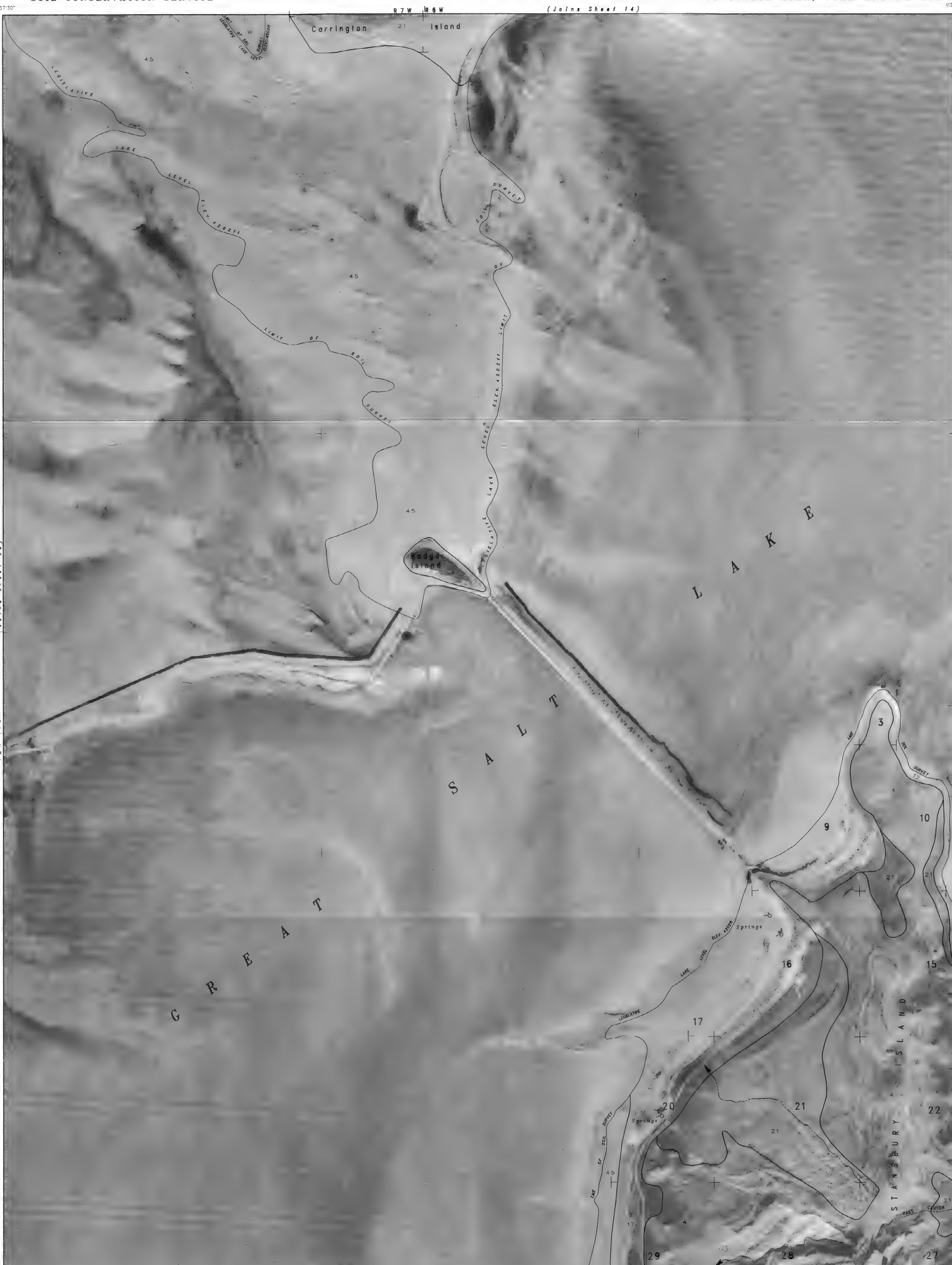
TOOELE AREA, UTAH AND NEVADA NO. 28

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1113 - Badger Island Nw



TOOELE AREA, UTAH AND NEVADA NO. 29

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

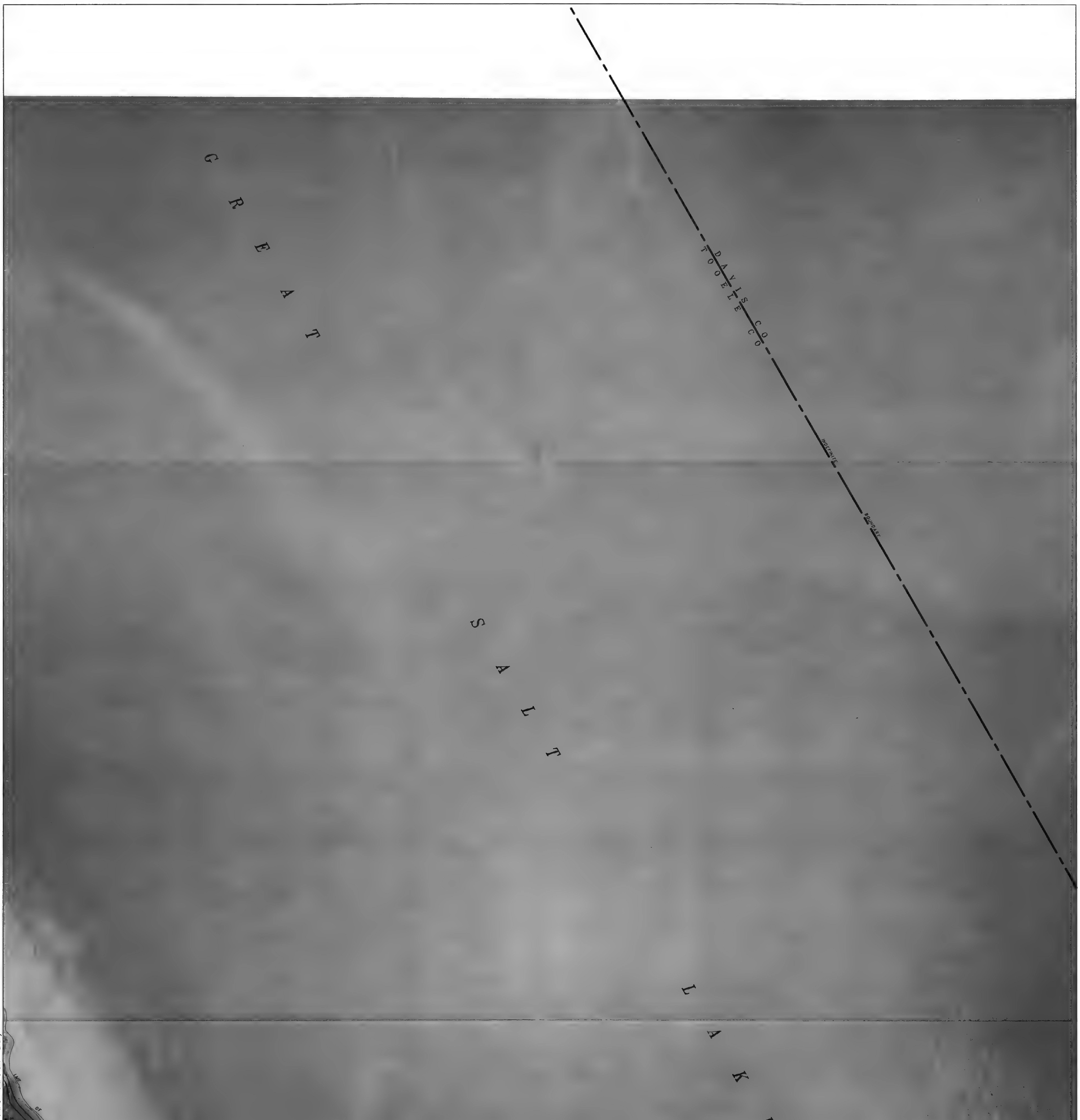
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 29 OF 164

Q1114 – Badger Island



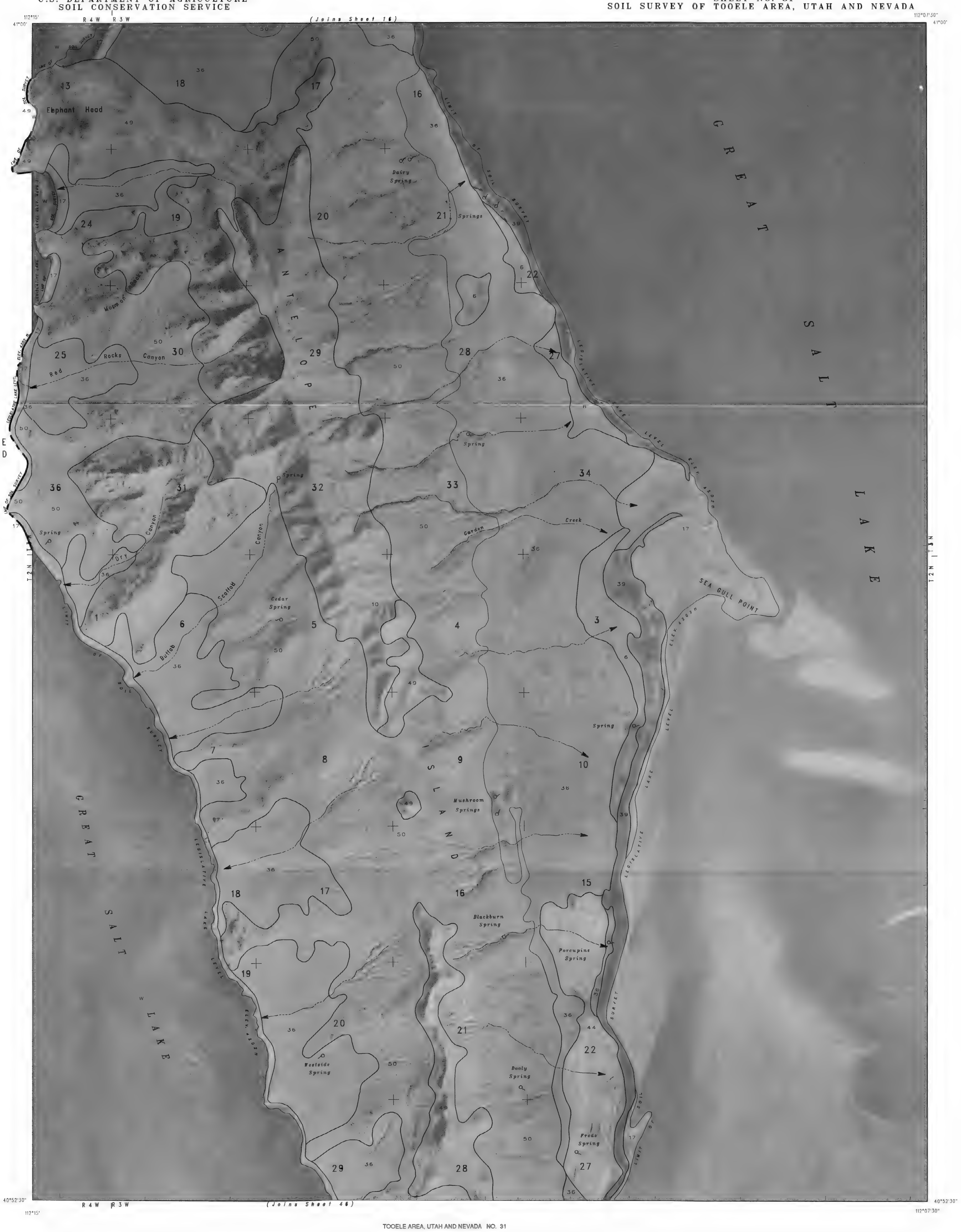
TOOELE AREA, UTAH AND NEVADA NO. 30

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 31 OF 164

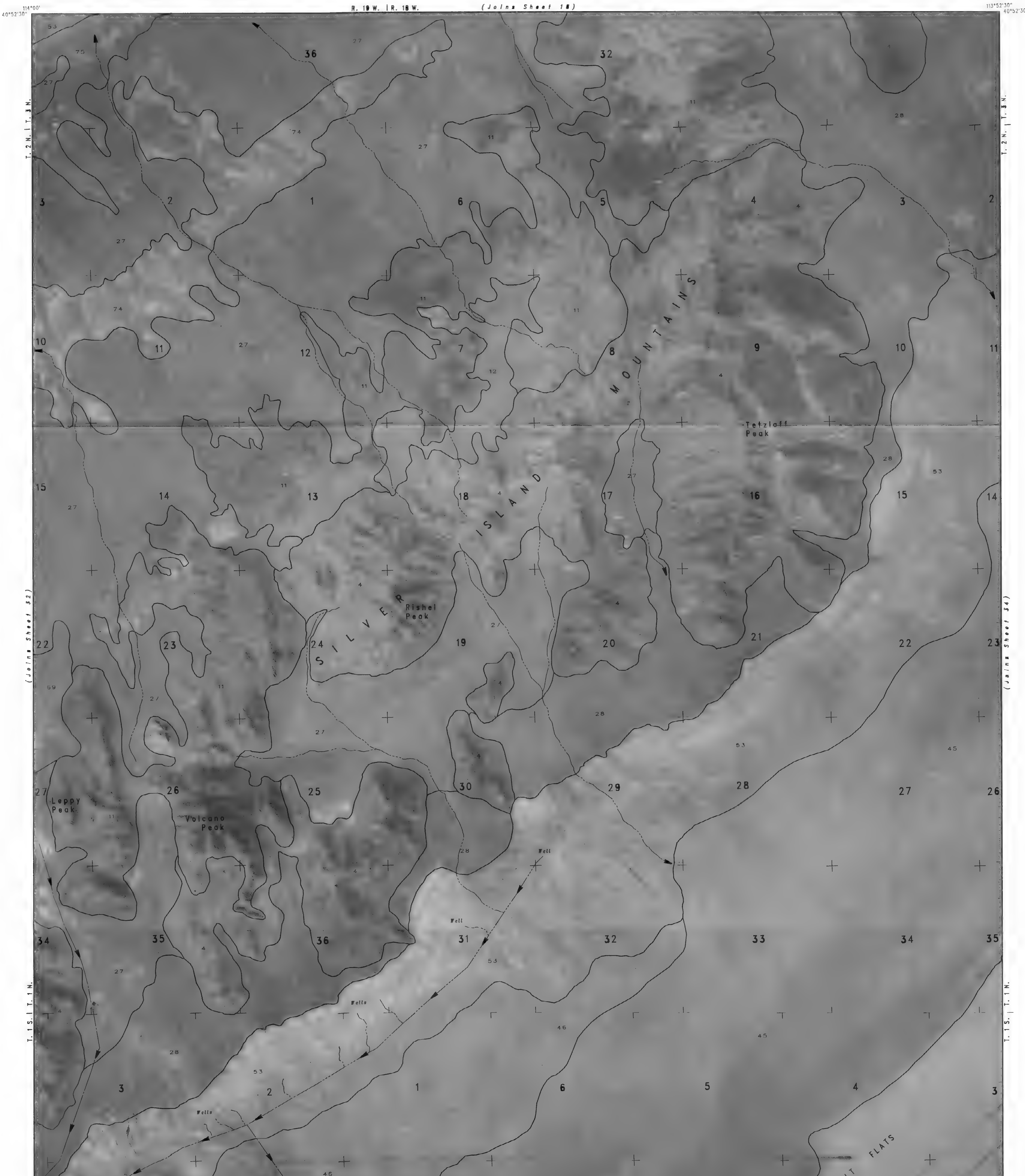
Q1117 – Antelope Island

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 32 OF 164
Q1202 – Leppy Peak



TOOELE AREA, UTAH AND NEVADA NO. 33

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid licks and land division corners, if shown, are approximately positioned.

SHEET NO. 33 OF 164

Q1203 - Tetzlaff Peak

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 34
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 34

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

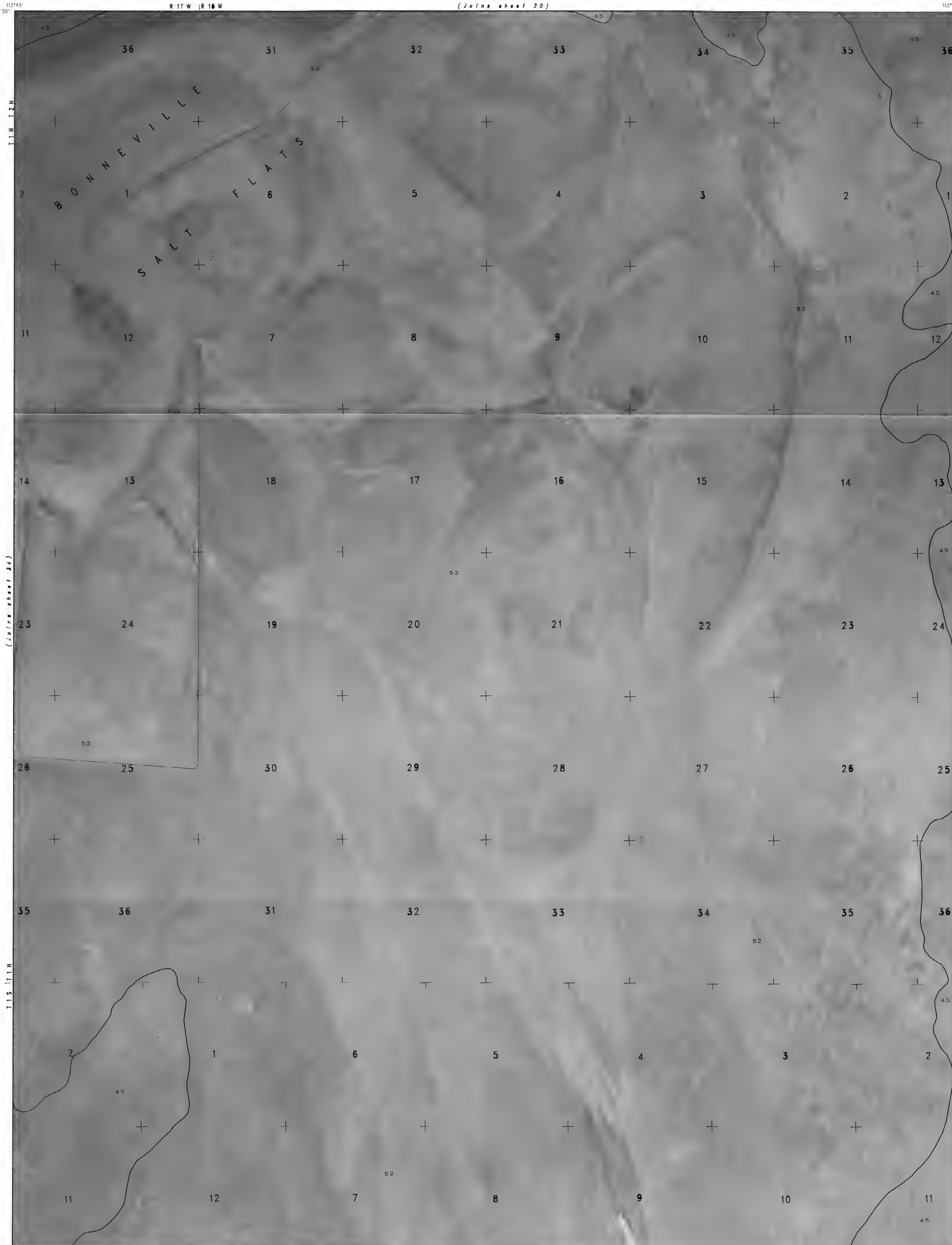
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 34 OF 164

Q1204 – Bonneville Racetrack



TOOELE AREA, UTAH AND NEVADA NO. 35

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

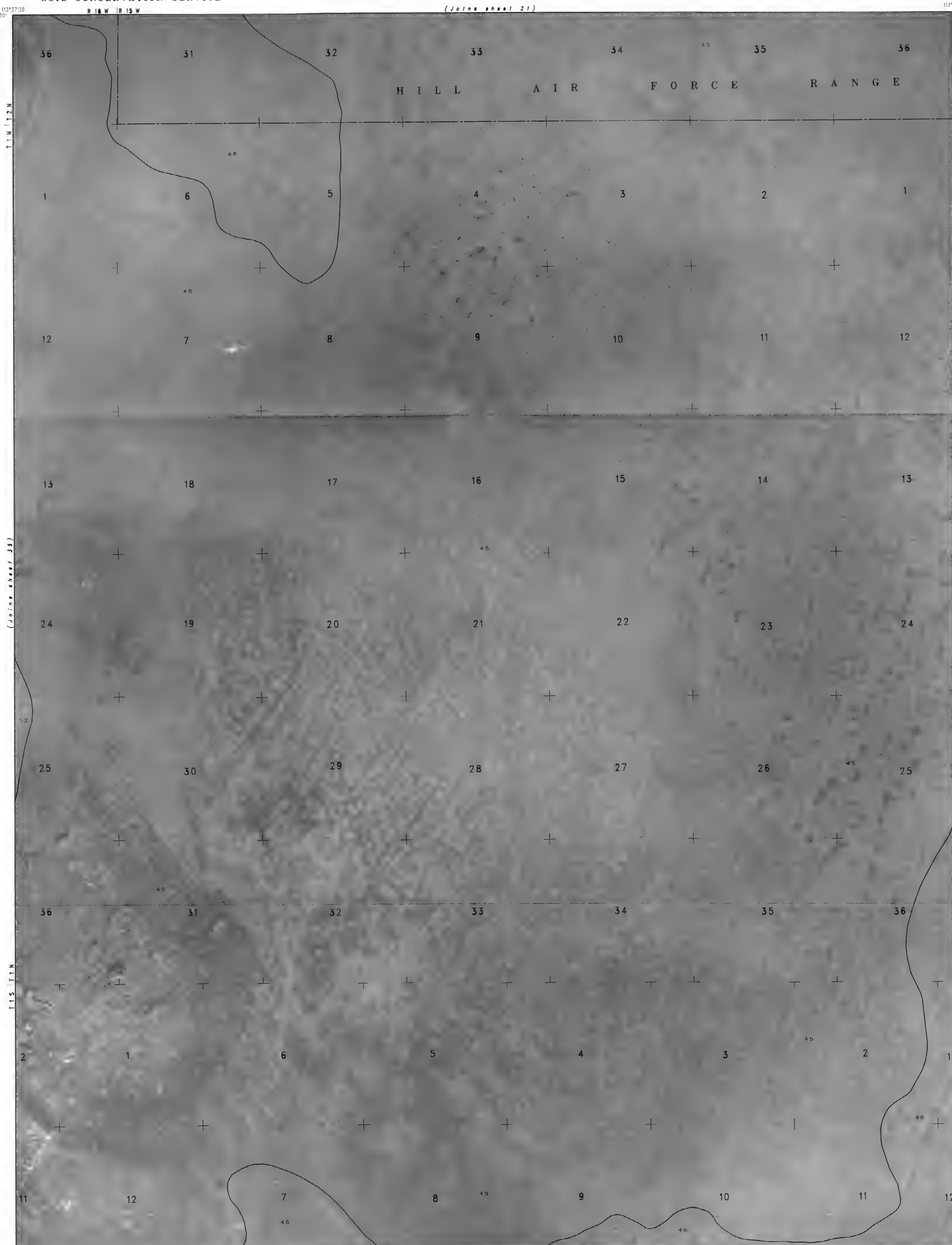
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 35 OF 164

Q1205 - Floating Island Sw



TOOELE AREA, UTAH AND NEVADA NO. 36

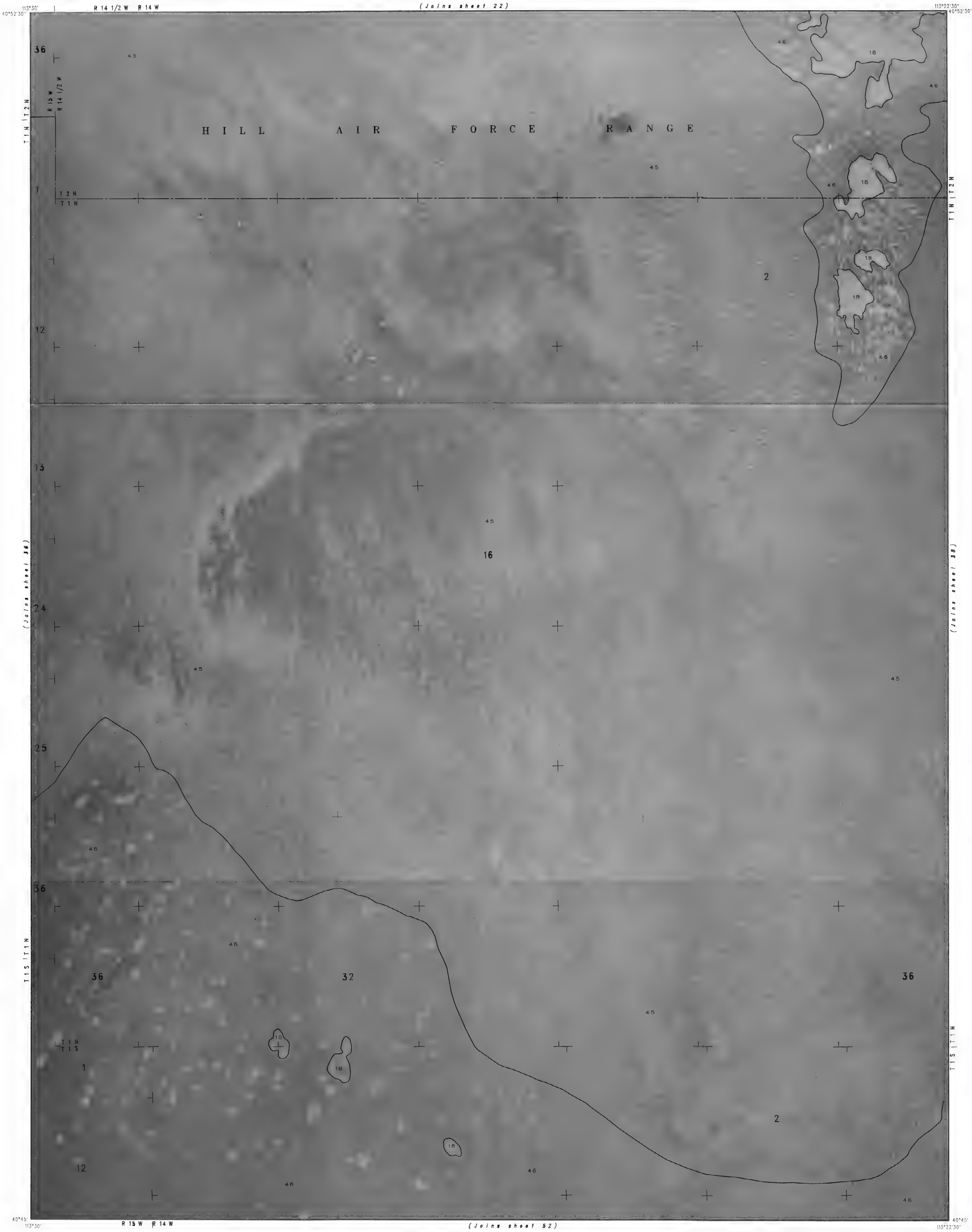
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 37
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 37

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

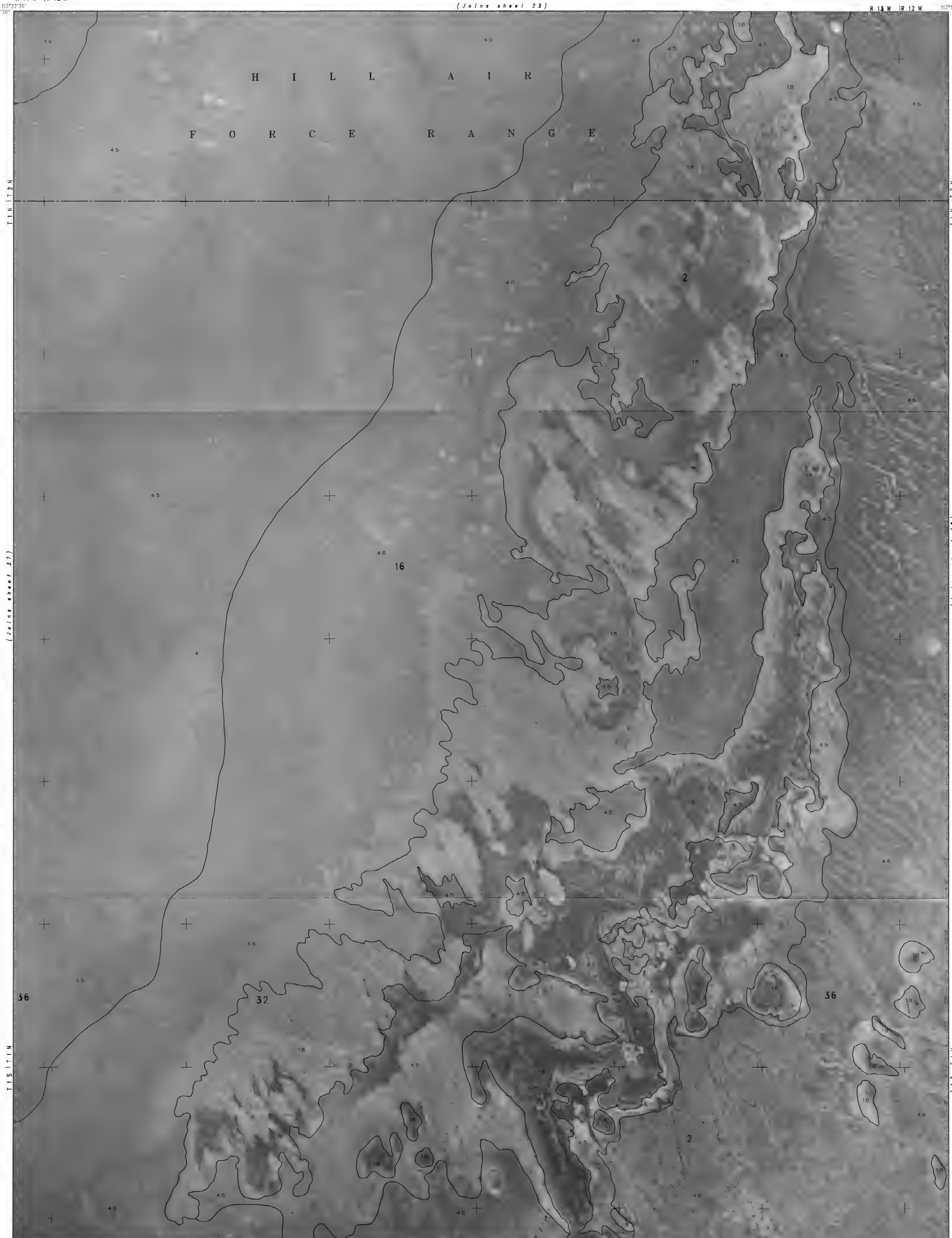
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 37 OF 164

Q1207 - Knolls 2 Sw



TOOELE AREA, UTAH AND NEVADA NO. 38

1 MILE · 1/2 · 0 · 1 MILE
1000 · 0 · 1000 · 2000 · 3000 · 4000 · 5000 · 6000 · 7000 FEET
1 · .5 · 0 · 1 KILOMETER

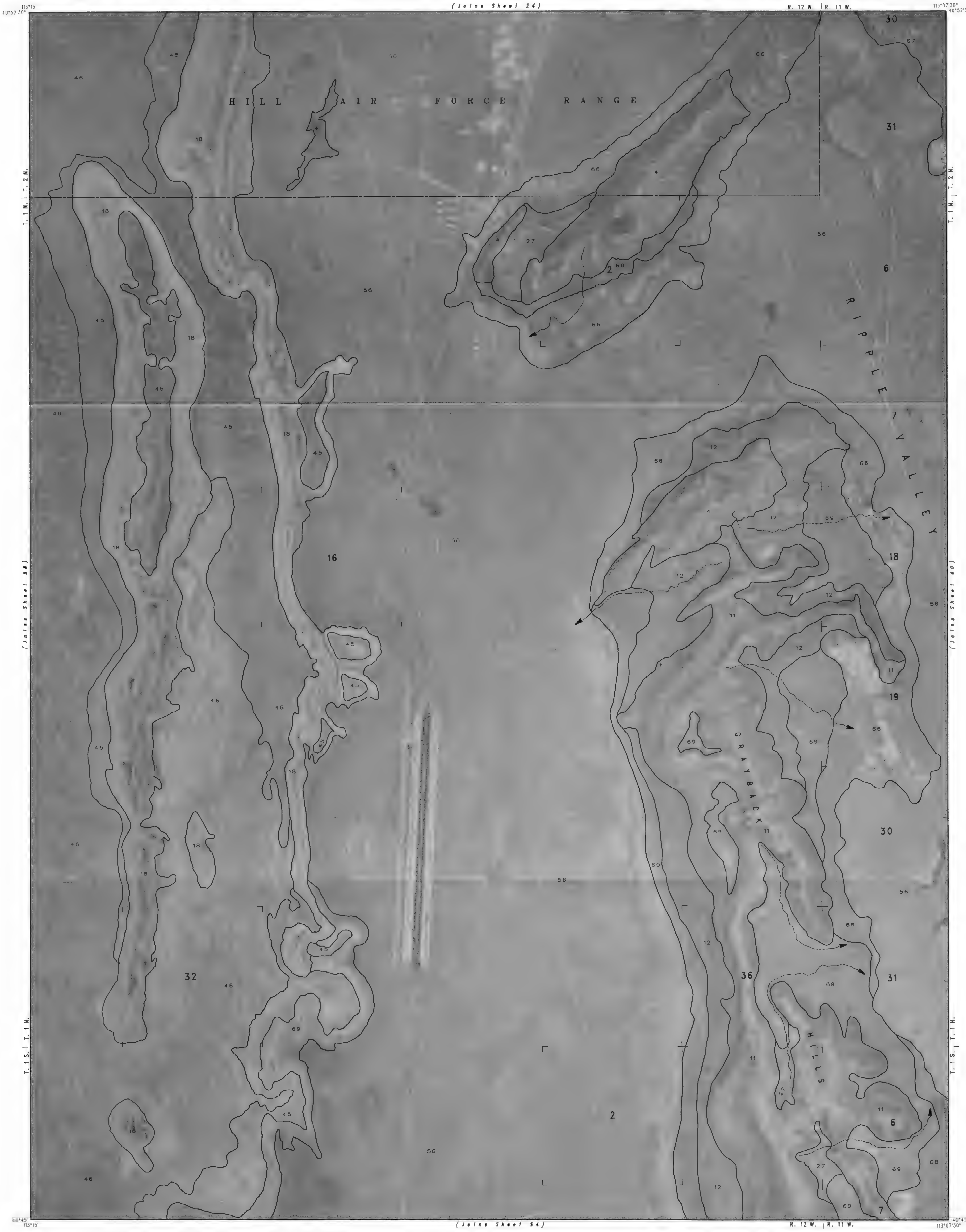
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 38 OF 164

Q1208 - Knolls 2 Se



TOOELE AREA, UTAH AND NEVADA NO. 39

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

Q1209 - Grayback Hills

TOOELE AREA, UTAH AND NEVADA NO. 40

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

TOOELE AREA, UTAH AND NEVADA NO. 41

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

112°52'30" 40°52'30" (Joins Sheet 27) R. 9 W. | R. 8 W. 112°45' 40°52'30"

40°45' 112°52'30" (Joins Sheet 57) R. 9 W. | R. 8 W. 40°45' 112°45'

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 43
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 43

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 43 OF 164
Q1213 - Poverty Point

112°37'30" R. 7 W. | R. 6 W. (Joins Sheet 29) 112°30'

40°52'30" 40°52'30"

(Joins Sheet 43) T. 1 N. | T. 2 N. (Joins Sheet 45) T. 1 S. | T. 1 N.

40°45' 112°37'30" R. 7 W. | R. 6 W. (Joins Sheet 50) 40°45' 112°30'

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

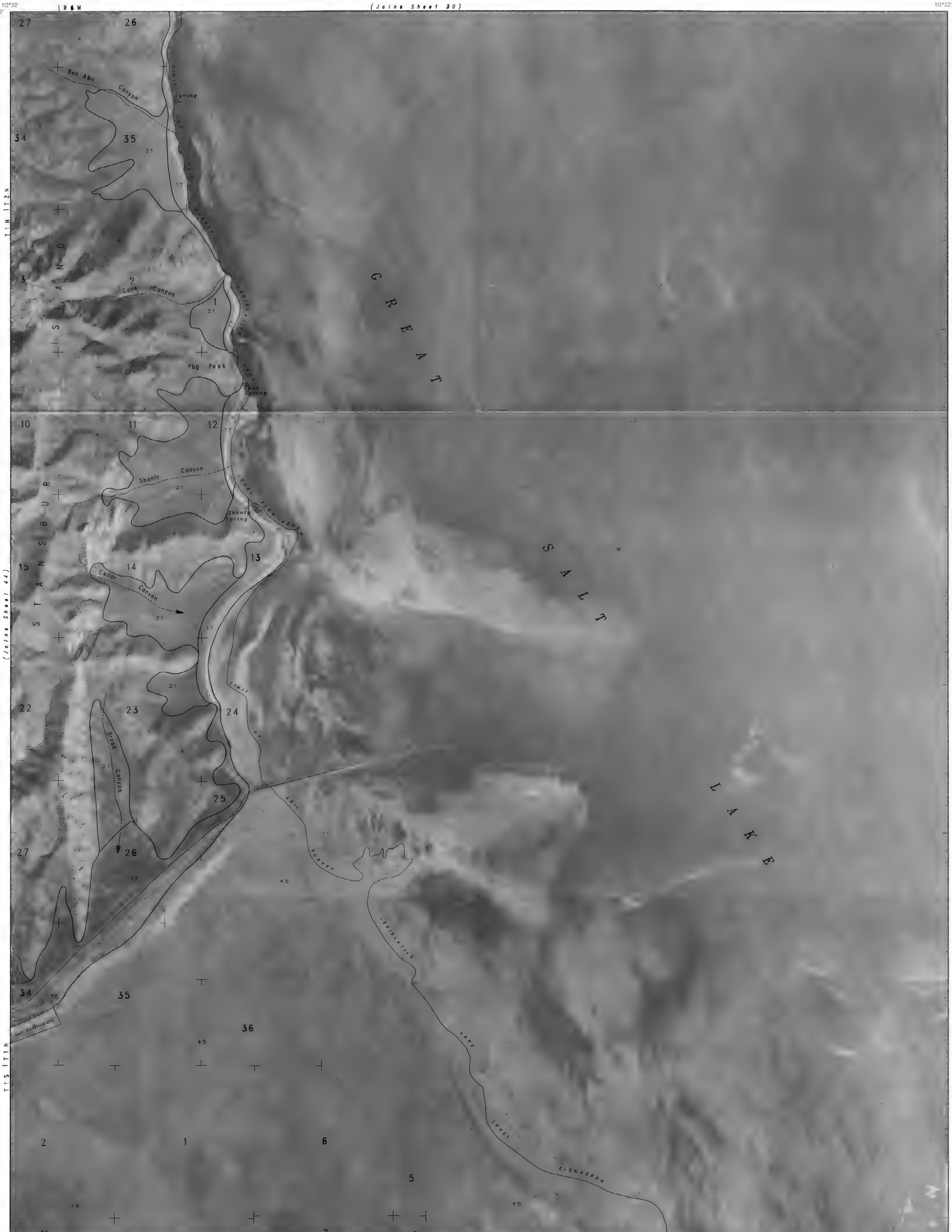
N

SHEET NO. 44 OF 164

Q1214 – Corral Canyon

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

(Joins Sheet 30)



112°30'
112°22'30"
40°52'30"
40°45'

(Joins Sheet 60)

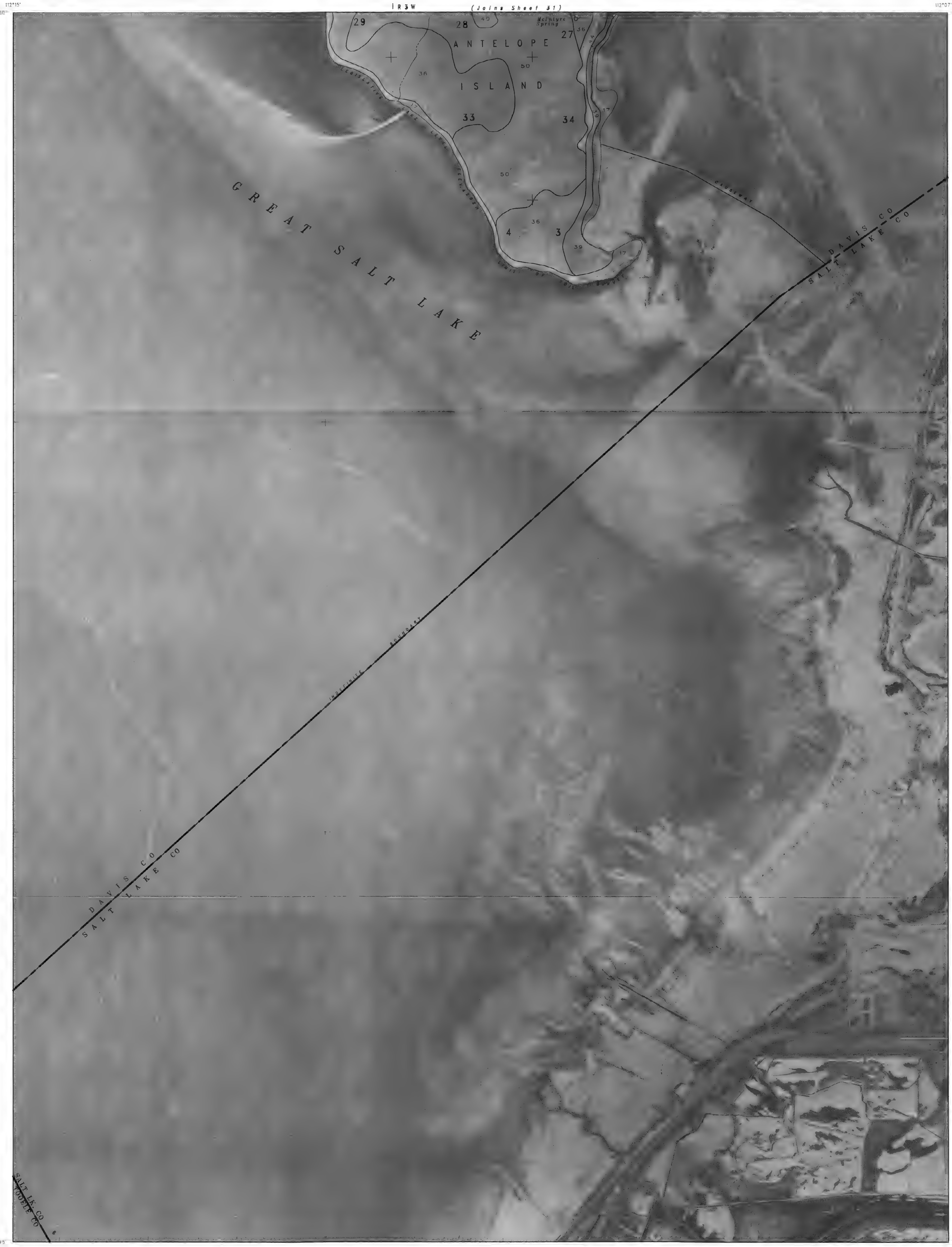
TOOELE AREA, UTAH AND NEVADA NO. 45

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1215 – Plug Peak



TOOELE AREA, UTAH AND NEVADA NO. 46

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 46 OF 164

Q1217 - Antelope Island South

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

Q1302 - Wendover

1 MILE 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

113°52'30" 40°45'
R 18 W | R 17 W (Joins Sheet 34) 113°45' 40°45'

(Joins Sheet 48) T 2 S | T 1 S

(Joins Sheet 50) T 2 S | T 1 S

40°37'30" 113°52'30" R 18 W | R 17 W (Joins Sheet 65) 40°37'30" 113°45'

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

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SHEET NO. 49 OF 164
Q1304 – Salduro

TOOELE AREA, UTAH AND NEVADA NO. 50

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 50 OF 164

Q1305 - Arinosa

TOOELE AREA, UTAH AND NEVADA NO. 51

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 51 OF 164
Q1306 – Arinosa Ne

TOOELE AREA, UTAH AND NEVADA NO. 52

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

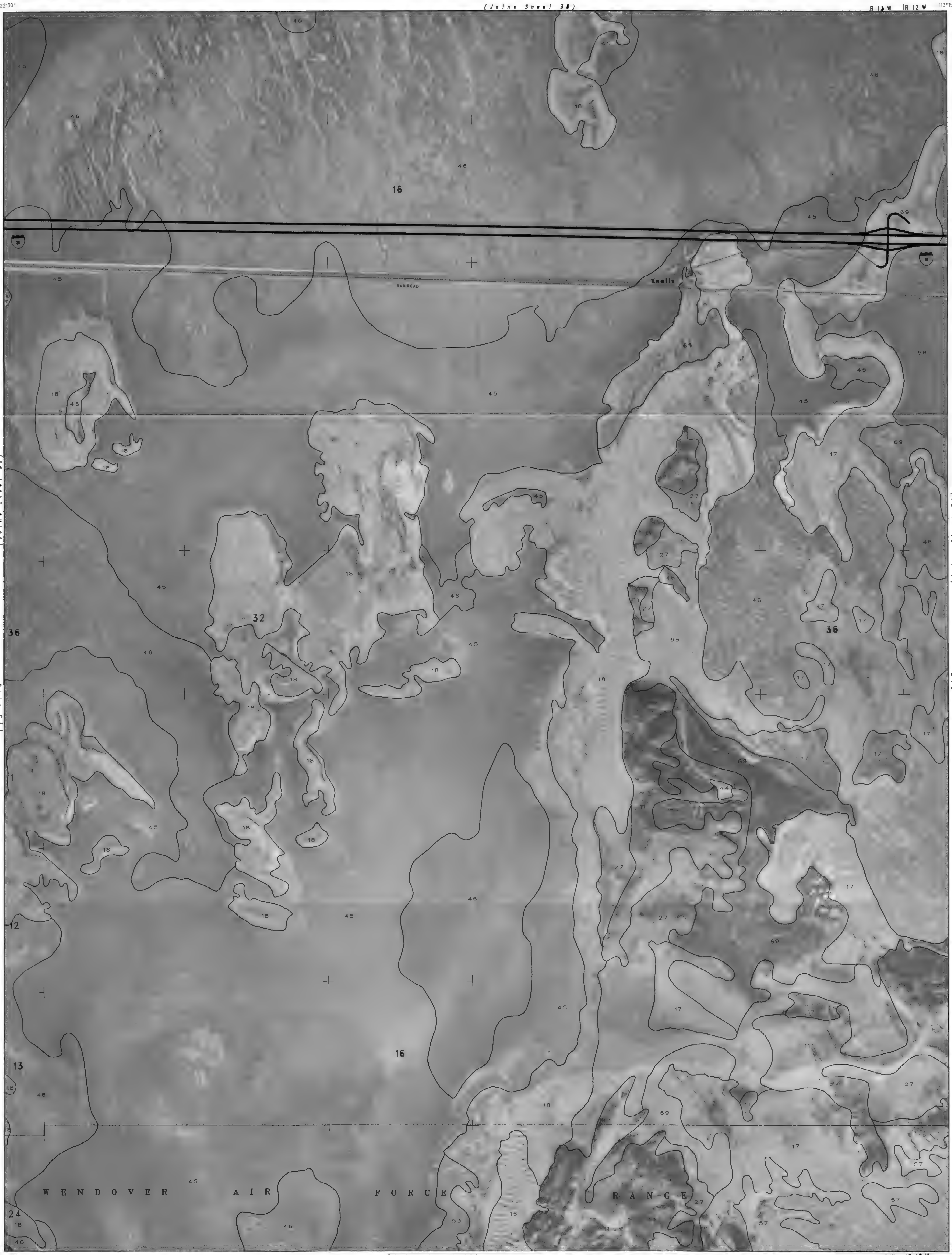
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 52 OF 164

Q1307 – Barro



TOOELE AREA, UTAH AND NEVADA NO. 53

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

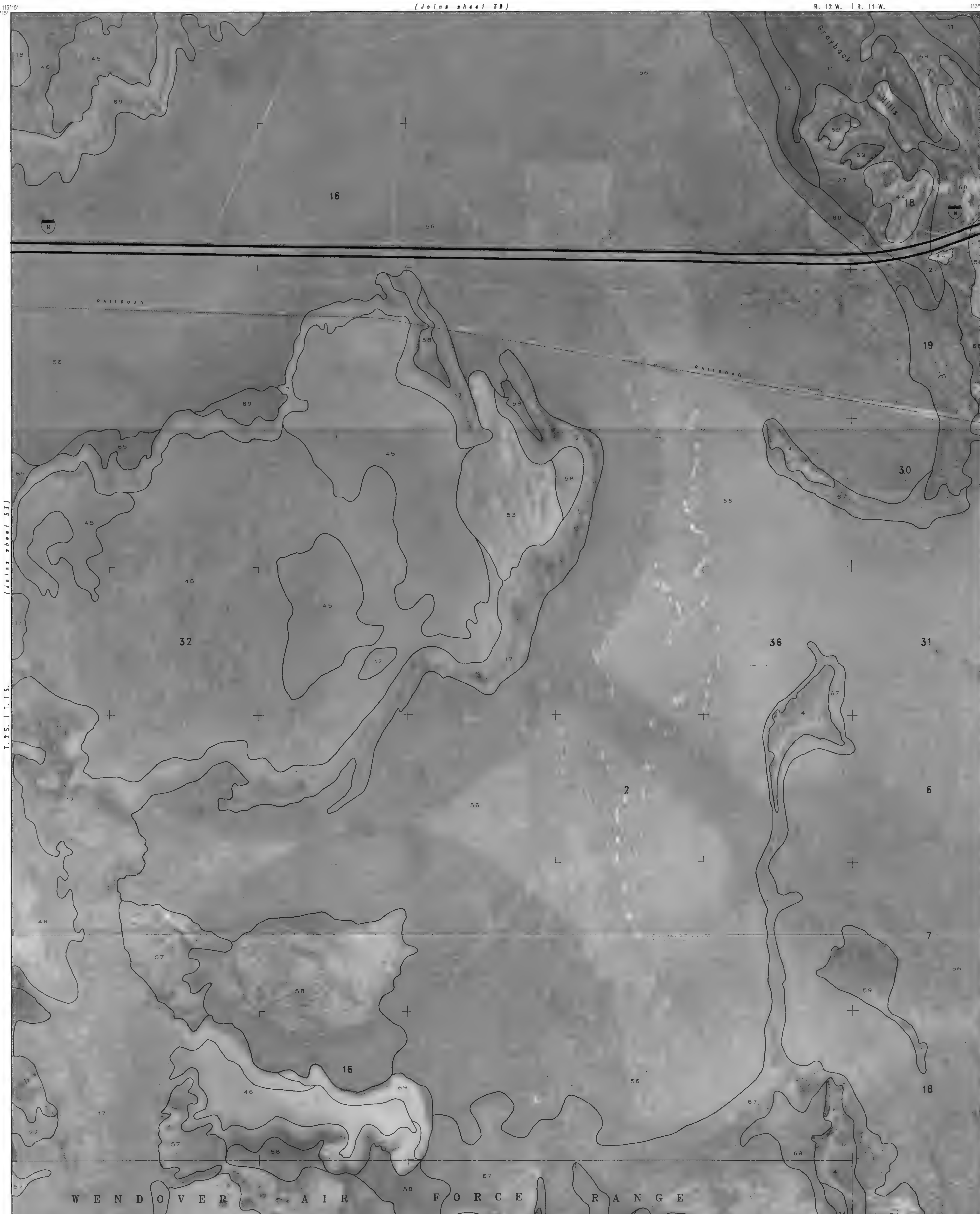
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 53 OF 164

Q1308 – Knolls



TOOELE AREA, UTAH AND NEVADA NO. 54

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

TOOELE AREA, UTAH AND NEVADA NO. 55

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 55 OF 164

Q1310 – Aragonite

TOOELE AREA, UTAH AND NEVADA NO. 56

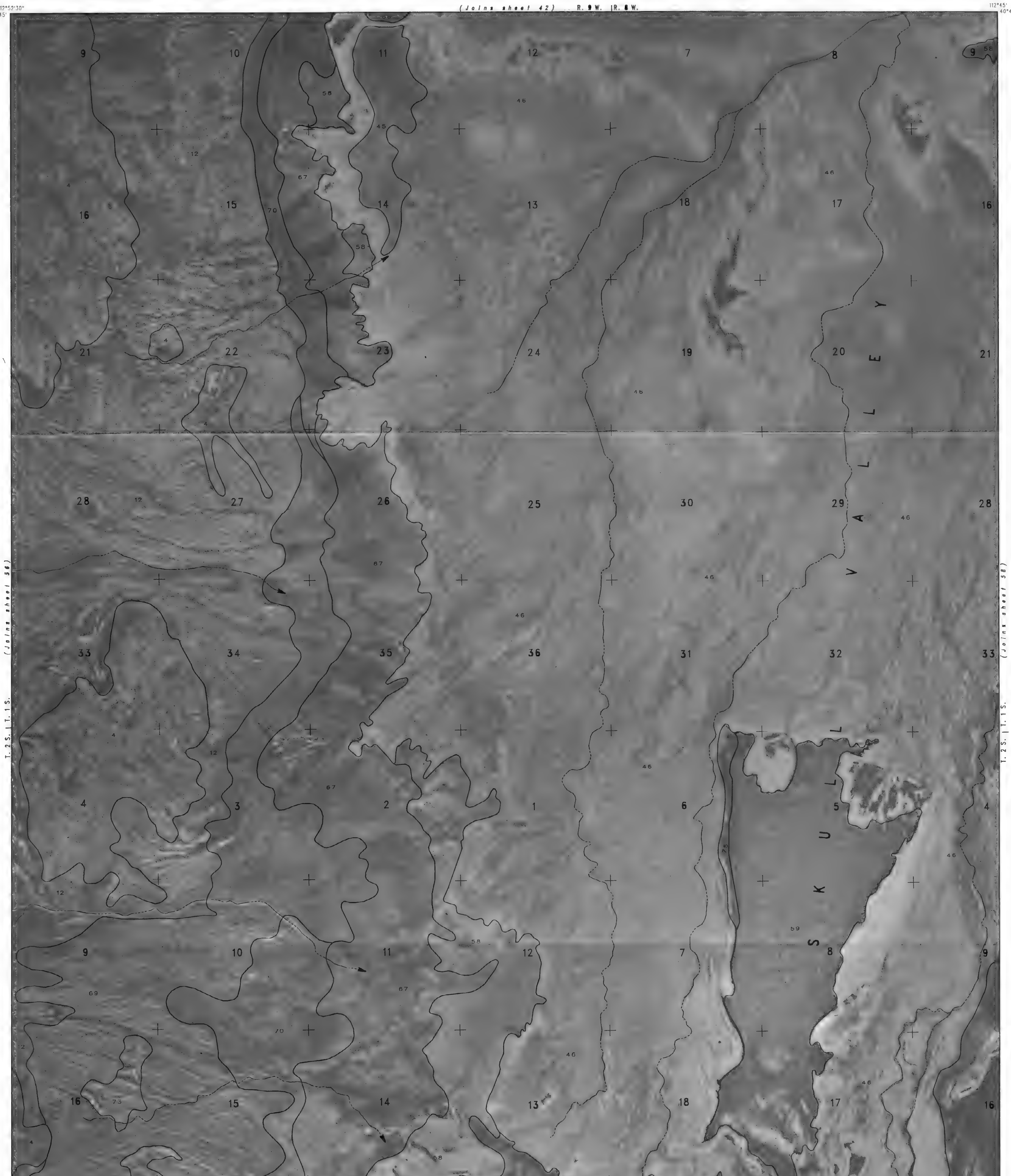
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

Q1311 - Hastings Pass



TOOELE AREA, UTAH AND NEVADA NO. 57

Scale 1:24,000

1 — 1/2 — 0 — 1 MILE

1000 — 0 — 1000 — 2000 — 3000 — 4000 — 5000 — 6000 — 7000 FEET

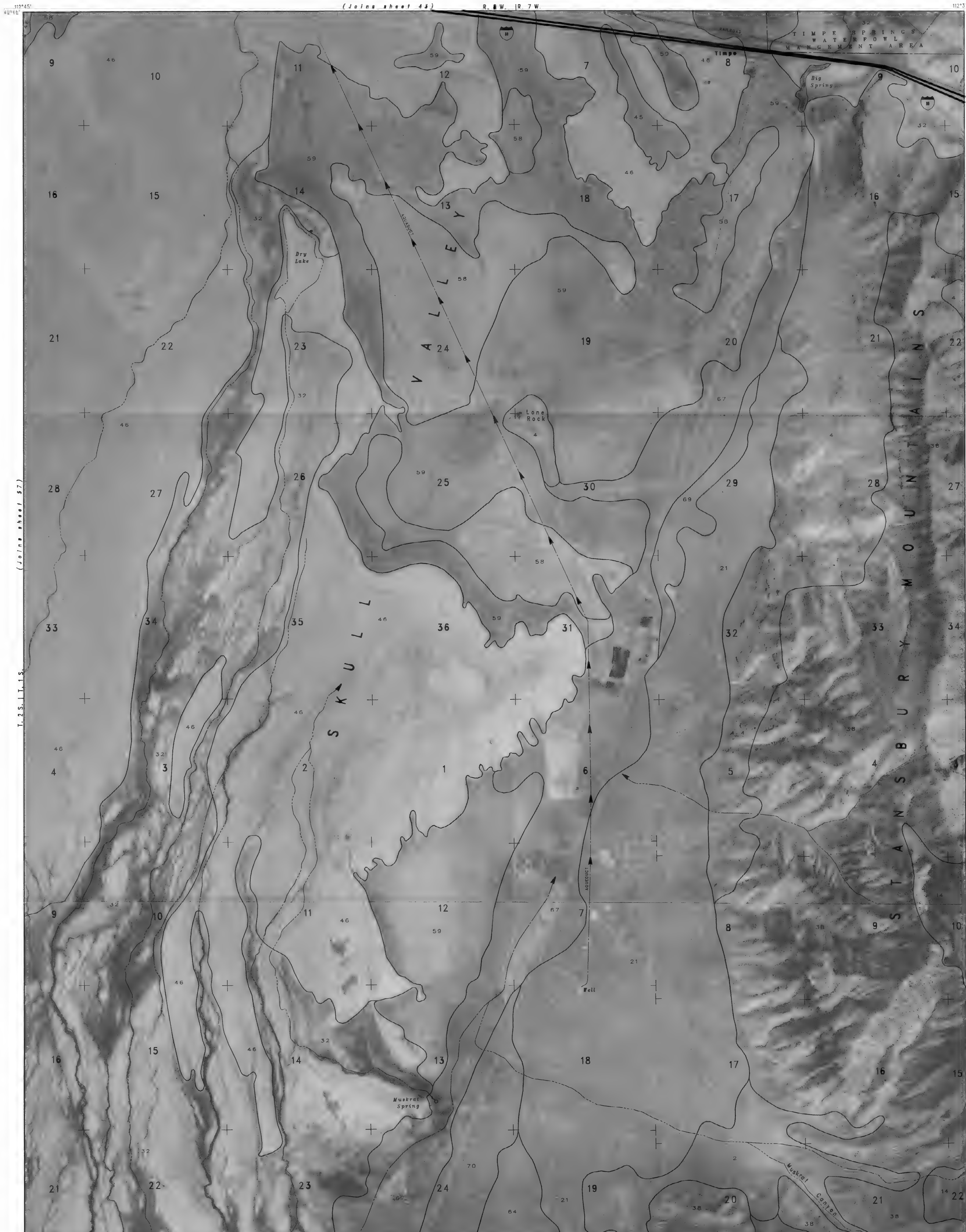
1 — .5 — 0 — 1 KILOMETER

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

SHEET NO. 57 OF 164

Q1312 - Hastings Pass Ne



TOOELE AREA, UTAH AND NEVADA NO. 58

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

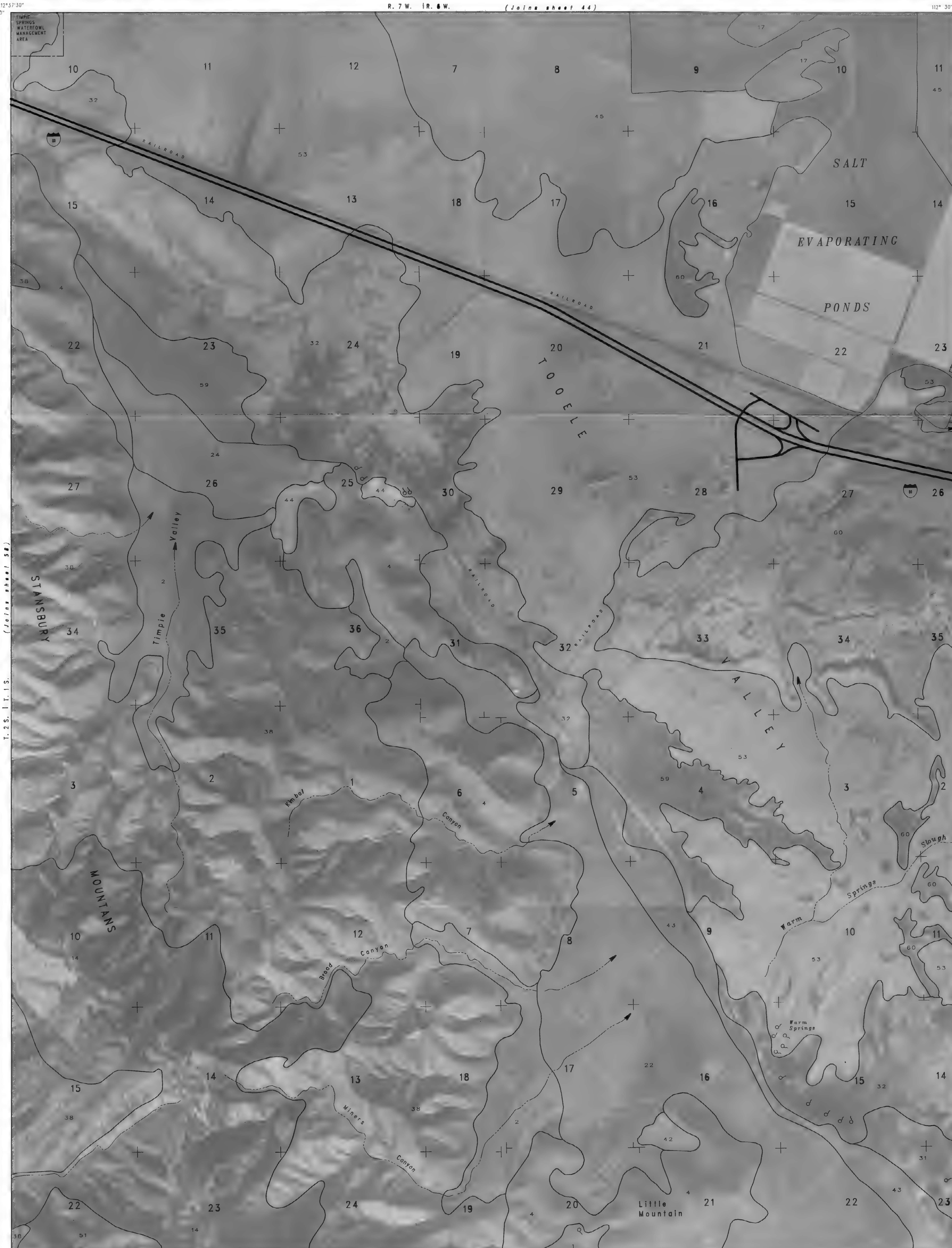
1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N



TOOELE AREA, UTAH AND NEVADA NO. 59

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1314 – Flux

TOOELE AREA, UTAH AND NEVADA NO. 60

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1315 – Burmester

112° 22' 30"
40° 45' 00"

112° 15' 00"
40° 45' 00"

40° 37' 30"
112° 22' 30"

R. 5 W. | R. 4 W.

(Joins Sheet 77)

40° 37' 30"
112° 15' 00"

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

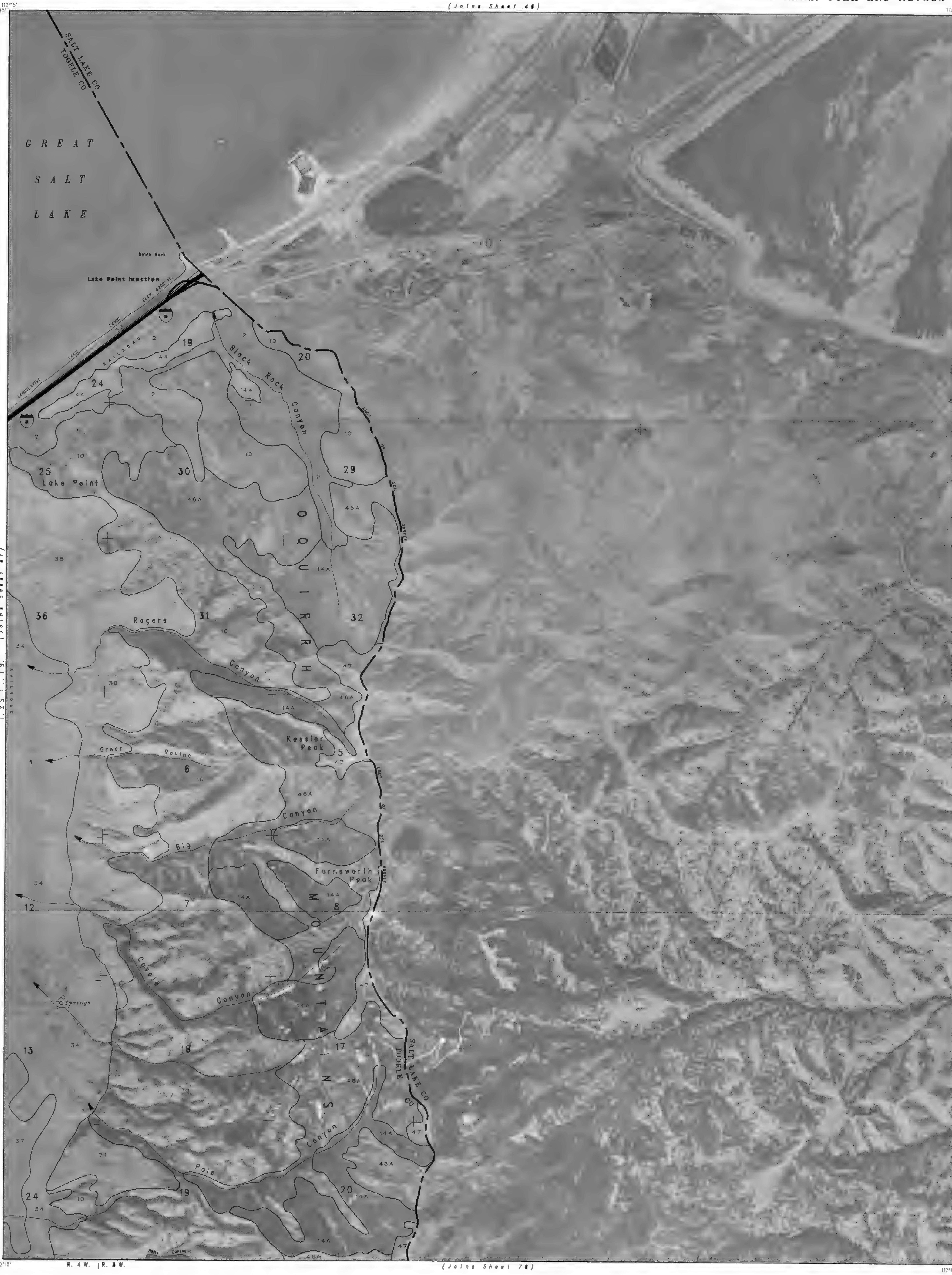
N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1316 – Mills Junction

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 62
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 62

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 62 OF 164

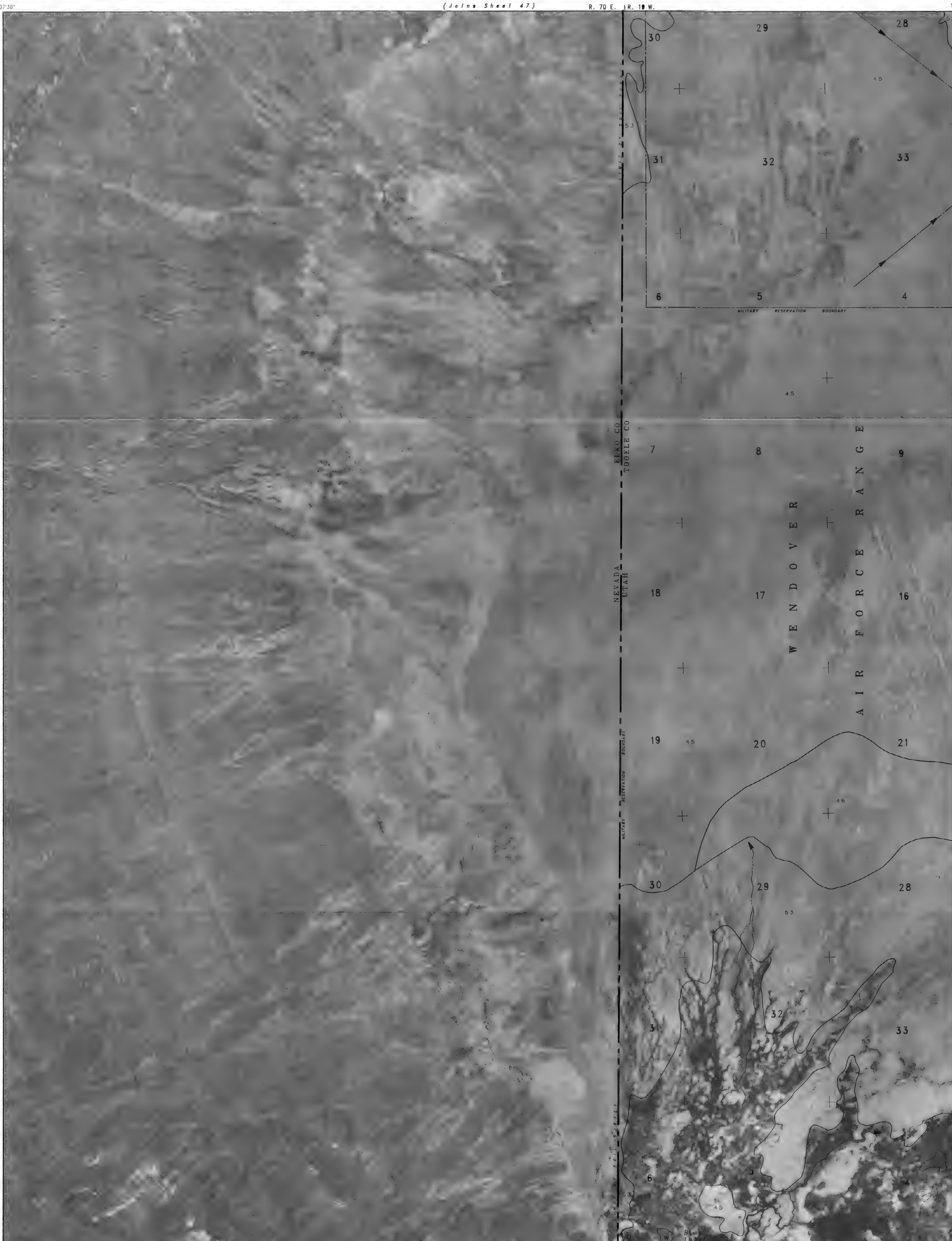
Q1317 – Farnsworth Peak

114°07'30"
40°37'30"

(Joins Sheet 47)

R. 70 E. | R. 19 W.

114°00'
40°37'30"



T. 3 S. | T. 2 S.

(Joins Sheet 64)

T. 3 S. | T. 2 S.

40°30'
114°07'30"

(Joins Sheet 79)

R. 70 E. | R. 19 W.

40°30'
114°00'

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1402 – Wendover SE

TOOELE AREA, UTAH AND NEVADA NO. 64

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

TOOELE AREA, UTAH AND NEVADA NO. 65

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1404 - Salduro Se

TOOELE AREA, UTAH AND NEVADA NO. 66

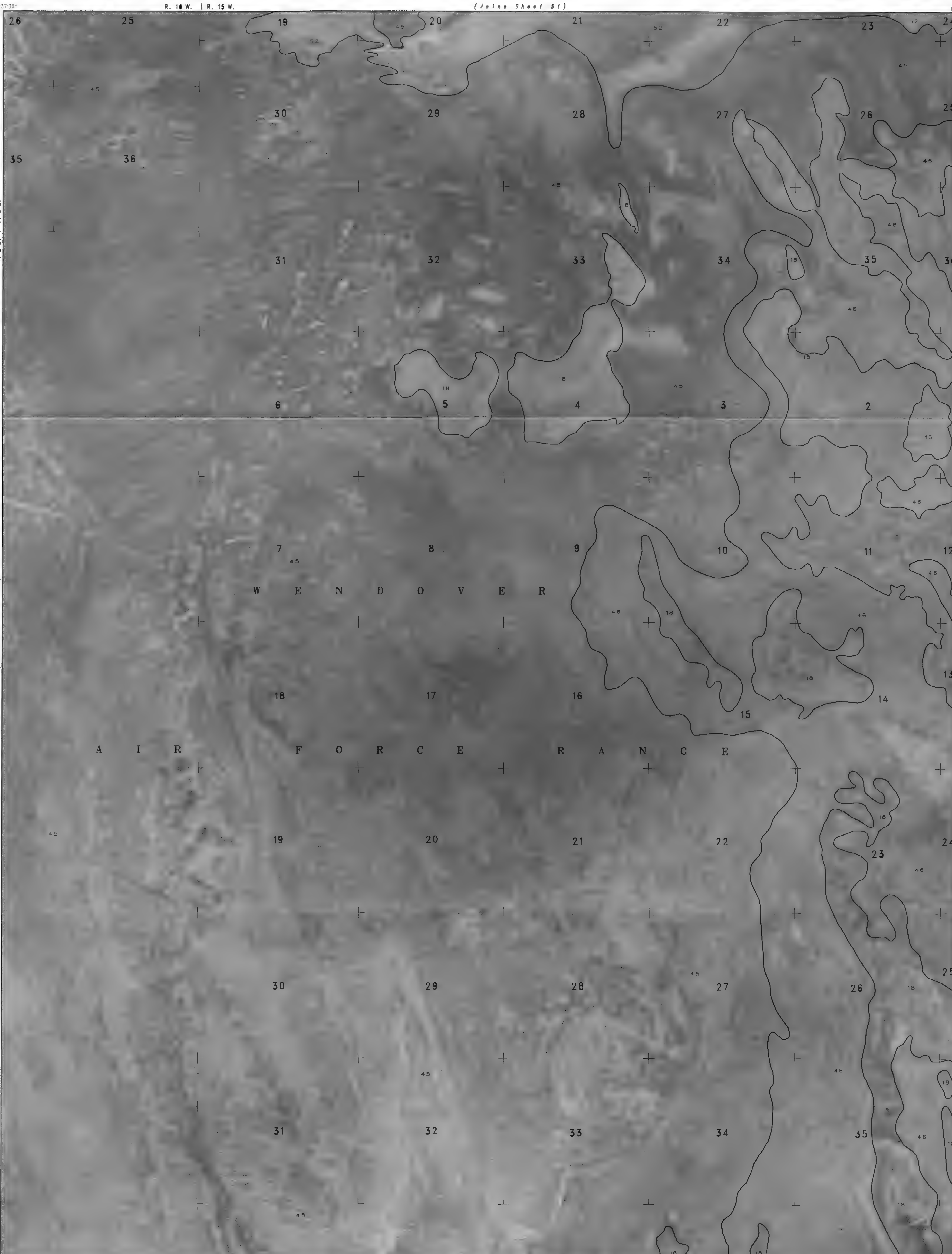
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 66 OF 164

Q1405 – Arinosa Sw



TOOELE AREA, UTAH AND NEVADA NO. 67

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 67 OF 164

Q1406 - Arinosa Se

TOOELE AREA, UTAH AND NEVADA NO. 68

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

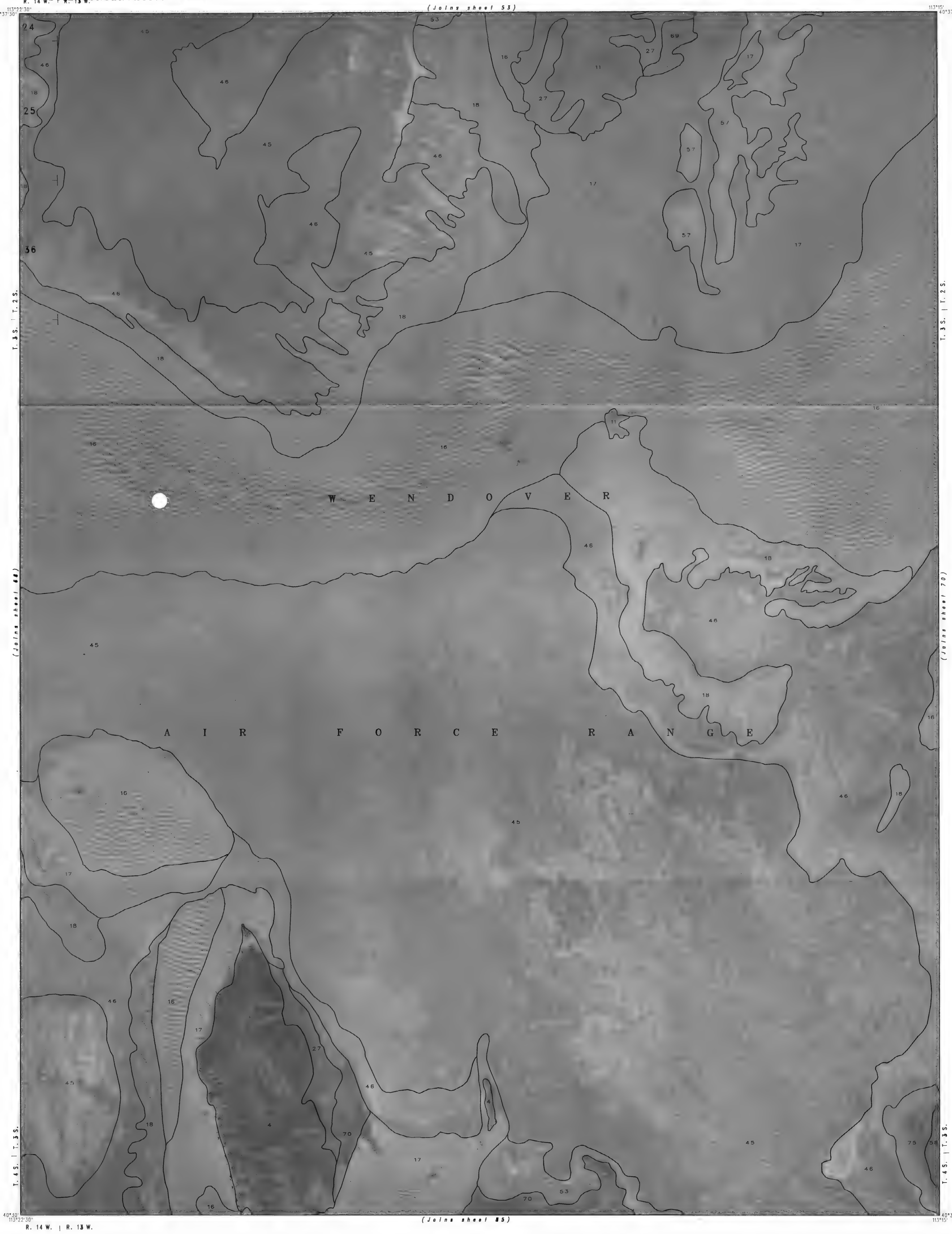
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 68 OF 164

Q1407 - Knolls Sw

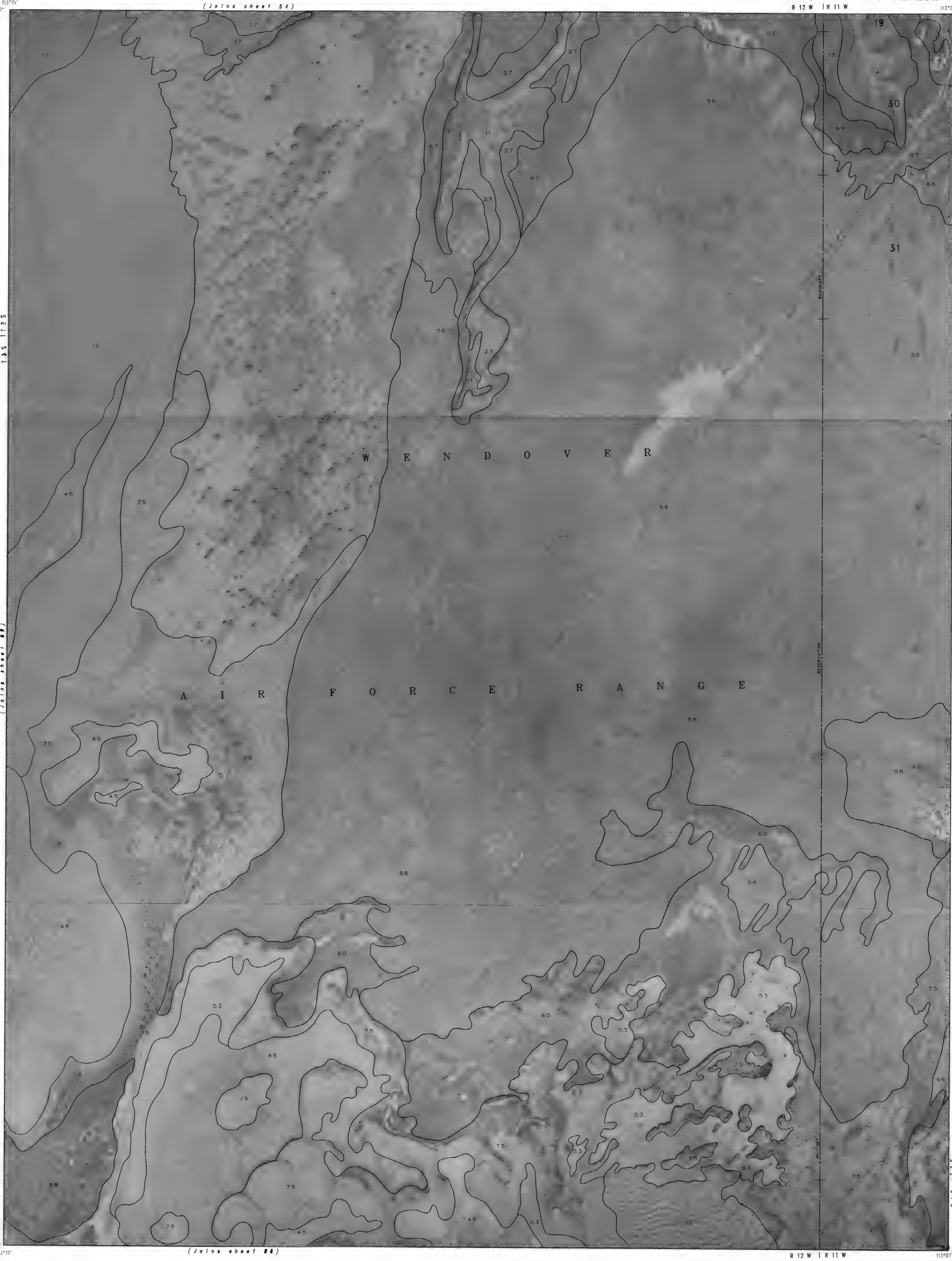


TOOELE AREA, UTAH AND NEVADA NO. 69

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



TOOELE AREA, UTAH AND NEVADA NO. 70

1 1/2 0 1 MILE

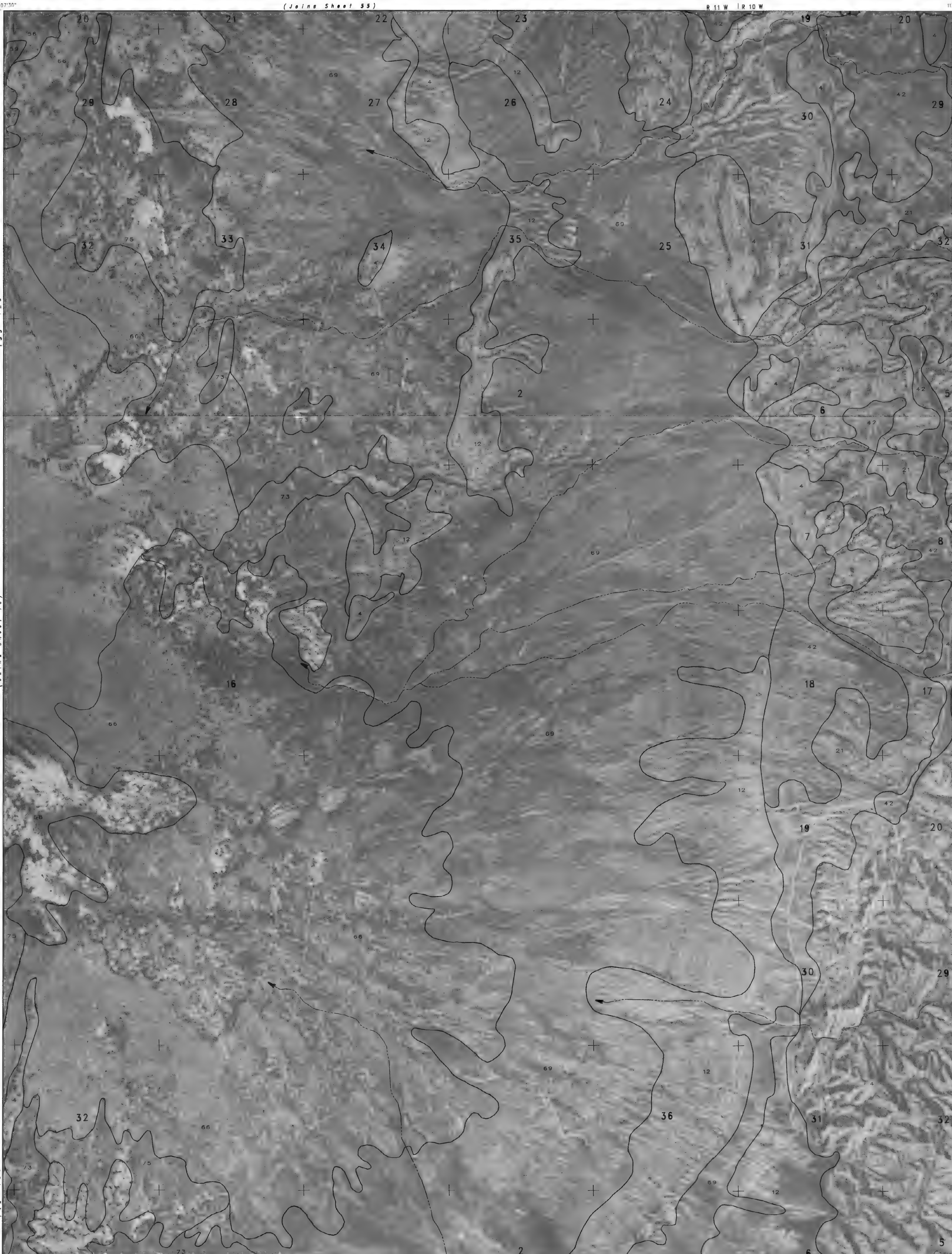
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

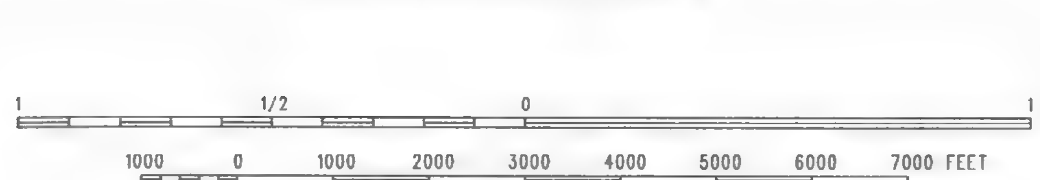
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



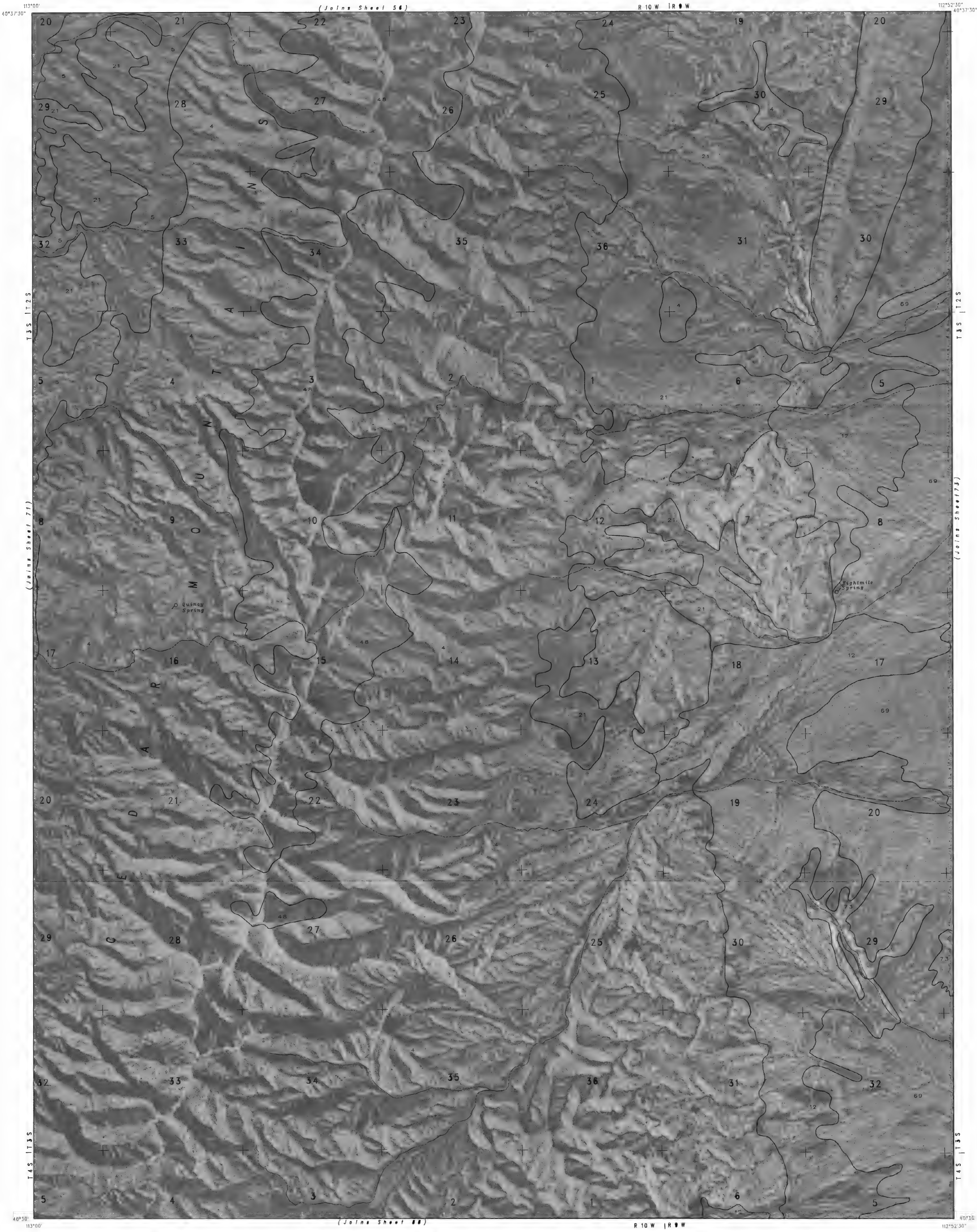
TOODELE AREA, UTAH AND NEVADA NO. 71



Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1410 – Aragonite Se



TOOELE AREA, UTAH AND NEVADA NO. 72

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1411 – Quincy Spring

TOOELE AREA, UTAH AND NEVADA NO. 73

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

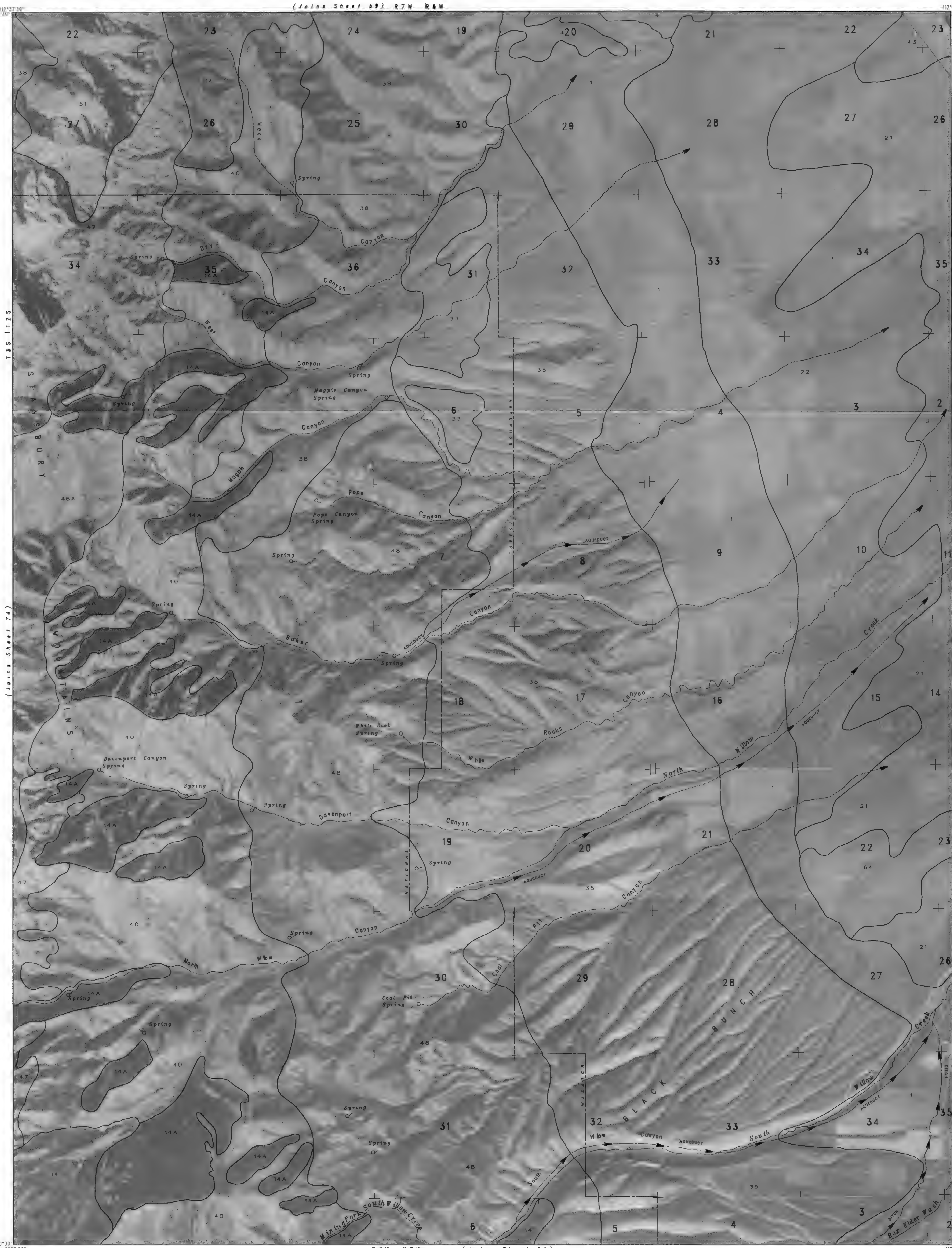
Q1412 - Hastings Pass Se

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 74 OF 164
Q1413 - Salt Mountain



1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 75 OF 164

Q1414 - North Willow Canyon

TOOELE AREA, UTAH AND NEVADA NO. 76

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 76 OF 164

Q1415 - Grantsville

TOOELE AREA, UTAH AND NEVADA NO. 77

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

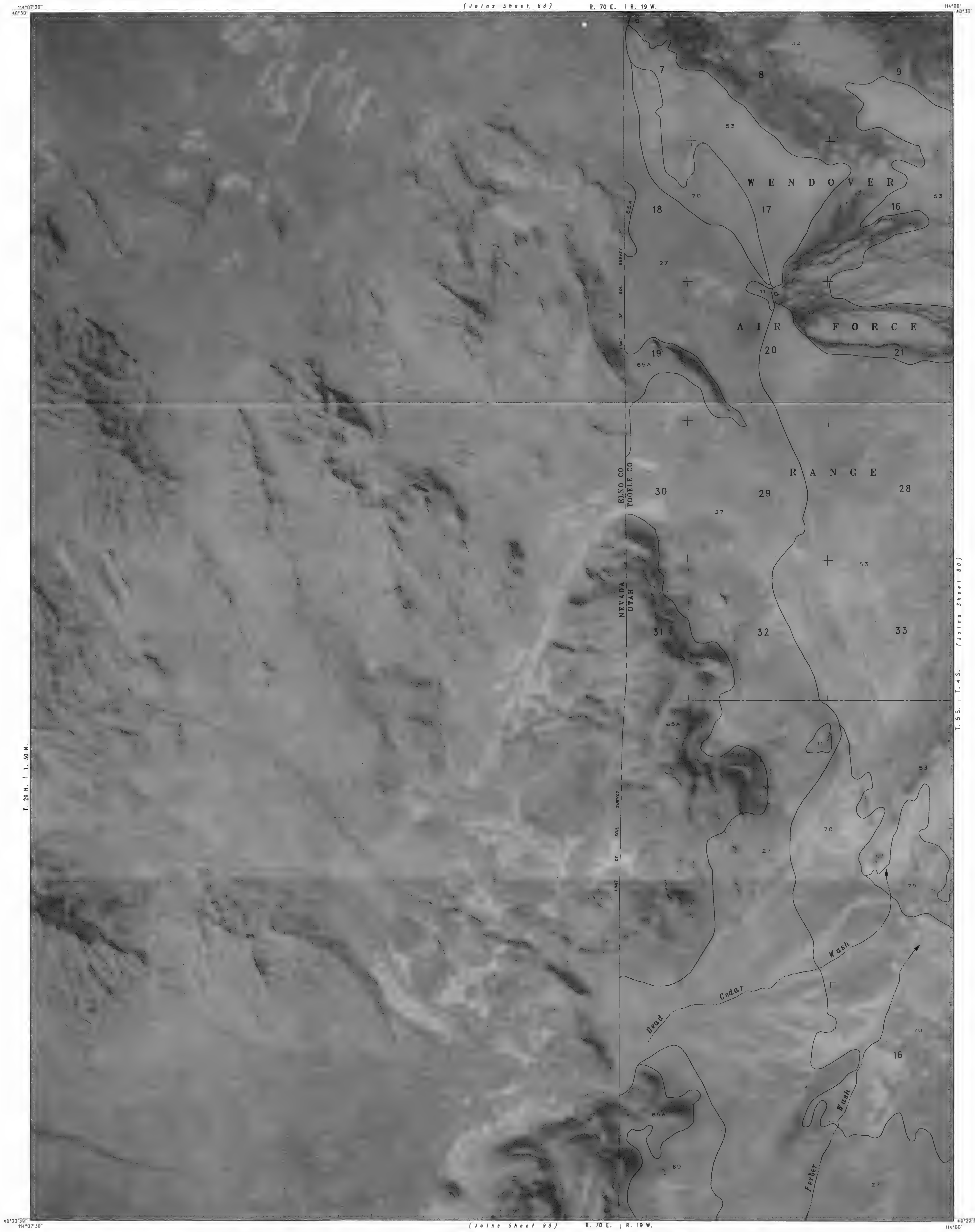
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



TOOELE AREA, UTAH AND NEVADA NO. 79

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

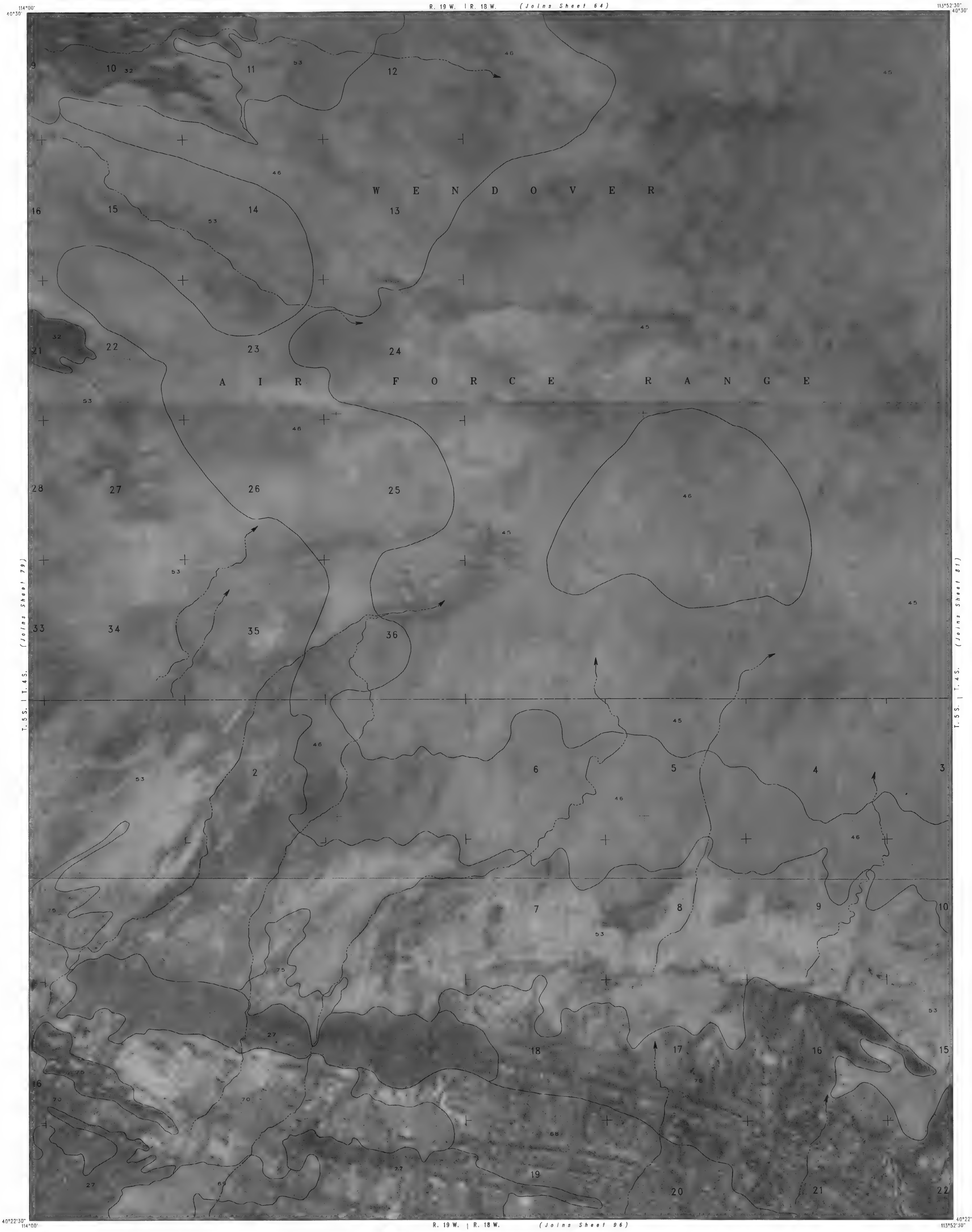
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 79 OF 164

Q1502 - Ferguson Flat



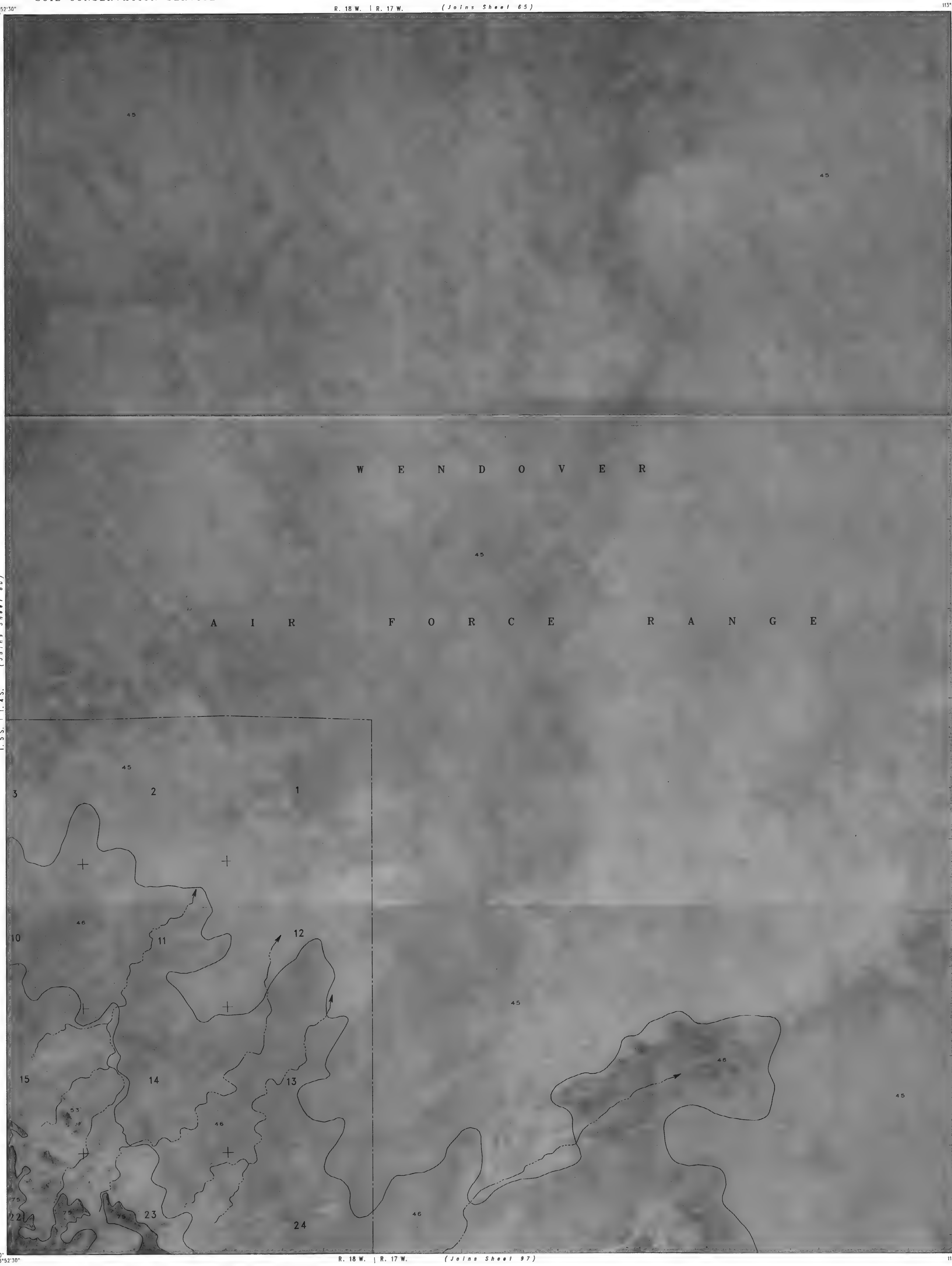
TOOELE AREA, UTAH AND NEVADA NO. 80

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1503 - Elephant Knoll Nw



TOOELE AREA, UTAH AND NEVADA NO. 81

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 81 OF 164

Q1504 – Elephant Knoll Ne

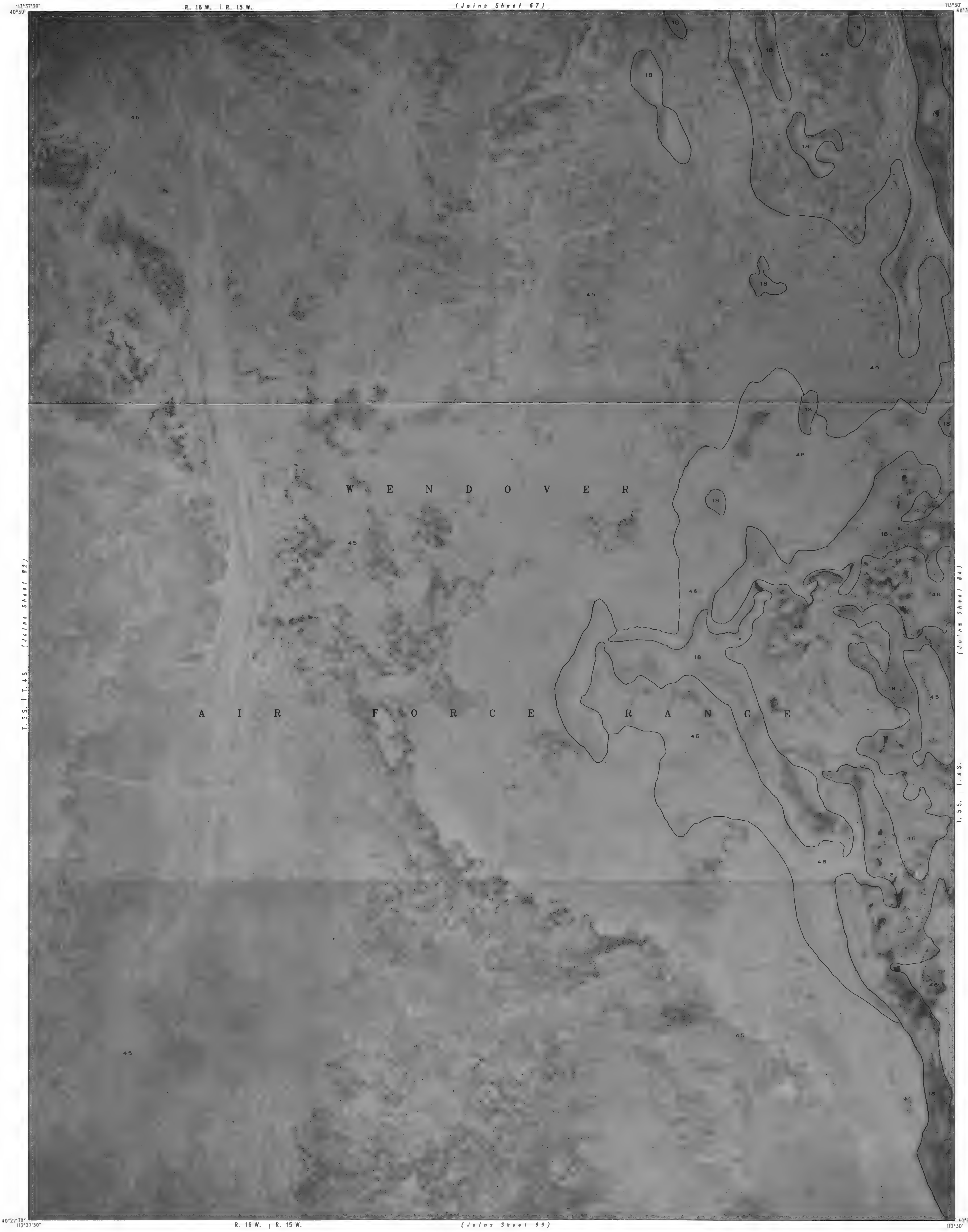
TOOELE AREA, UTAH AND NEVADA NO. 82

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

Q1505 – Gold Hill 1 Nw



TOOELE AREA, UTAH AND NEVADA NO. 83

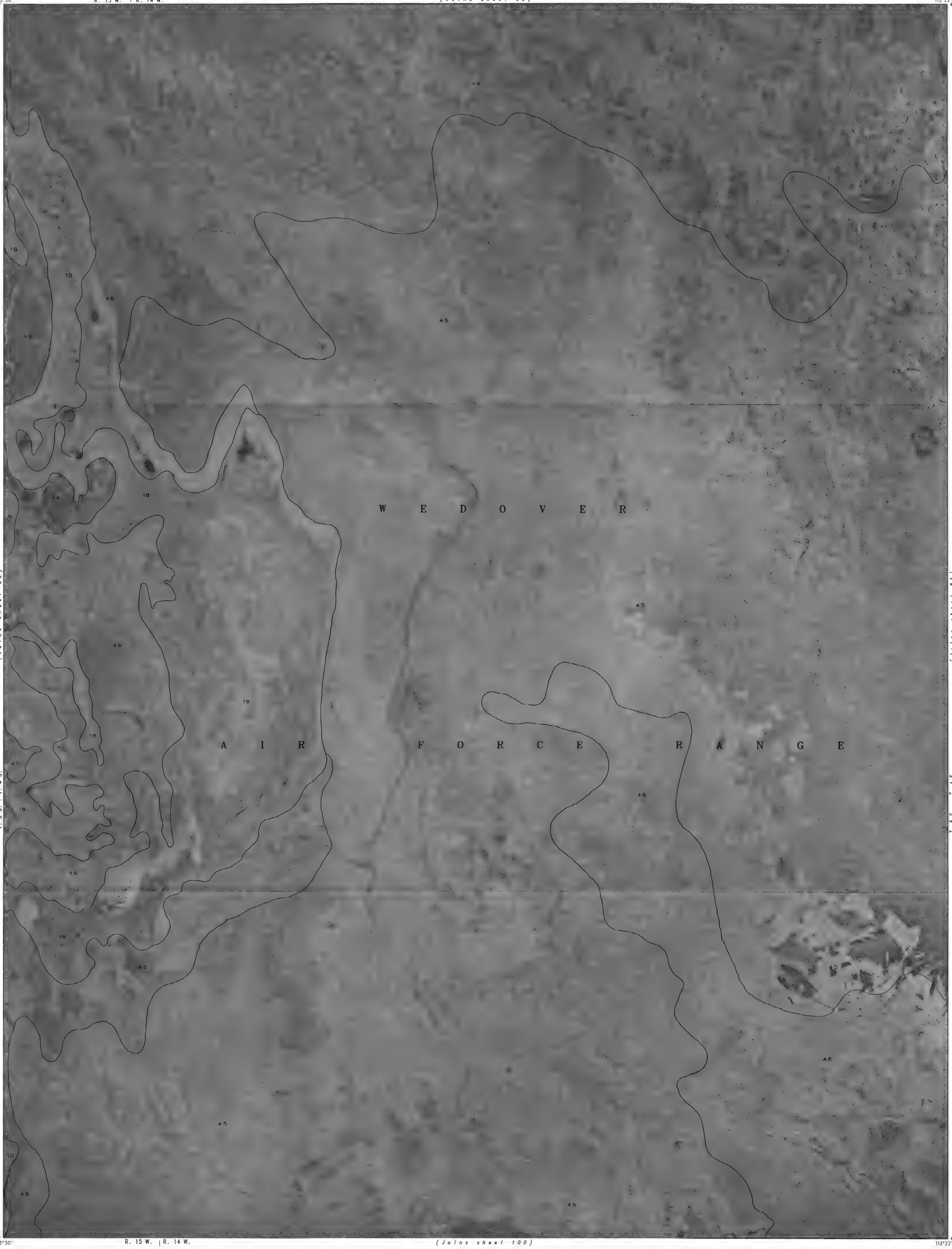
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

113°30' 40°30' R. 15 W. | R. 14 W. (Joins sheet 68) 113°22'30" 40°30'

(Joins sheet 83) T. 5 S. | T. 4 S.



(Joins sheet 85) T. 5 S. | T. 4 S.

40°22'30" 113°30' R. 15 W. | R. 14 W. (Joins sheet 100) 40°22'30" 113°22'30"

TOOELE AREA, UTAH AND NEVADA NO. 84

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 84 OF 164
Q1507 - Wildcat Mountin Nw

TOOELE AREA, UTAH AND NEVADA NO. 85

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

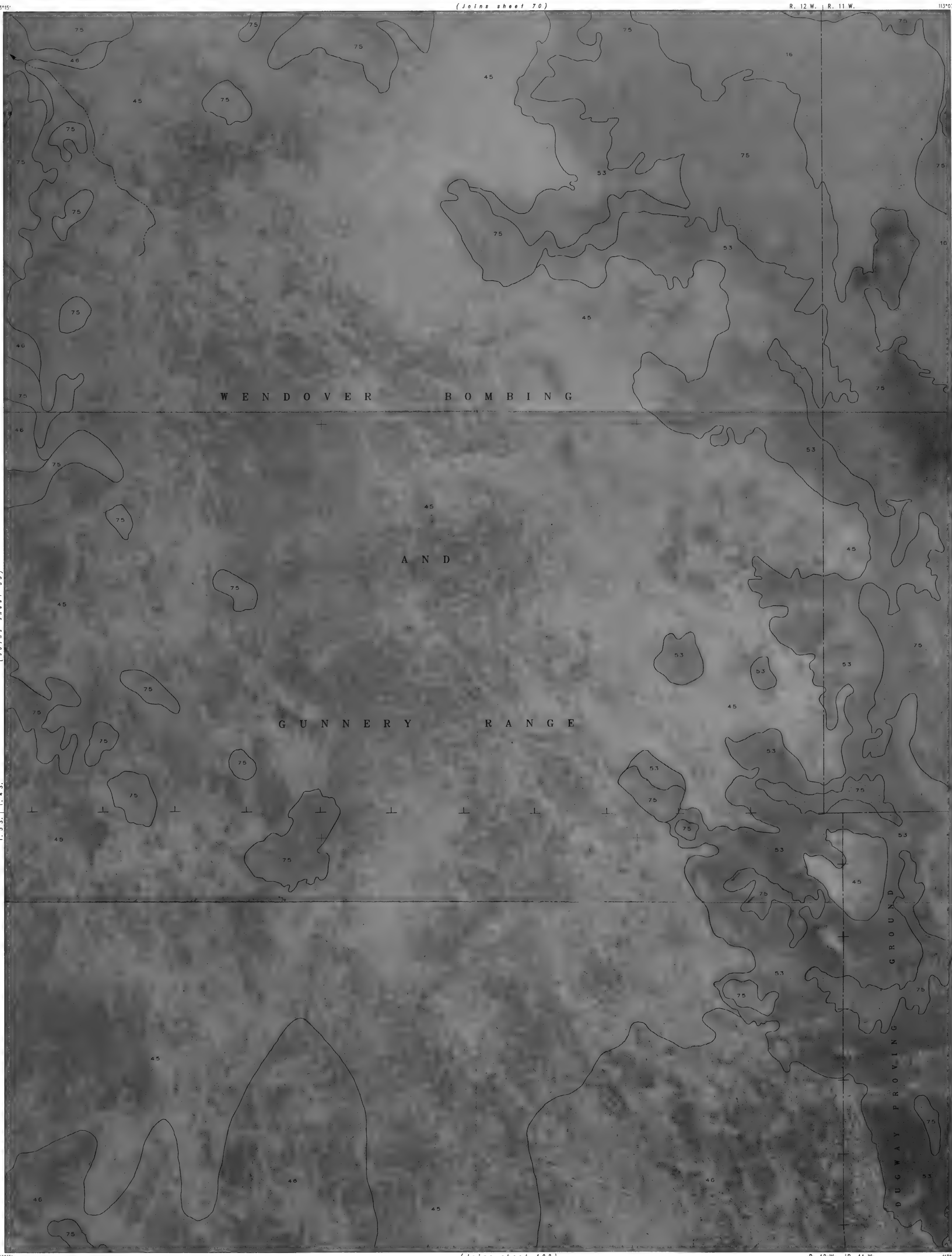
Scale 1:24,000

N

SHEET NO. 85 OF 164

Q1508 - Wildcat Mountain

(Joins sheet 70)



(Joins sheet 102)

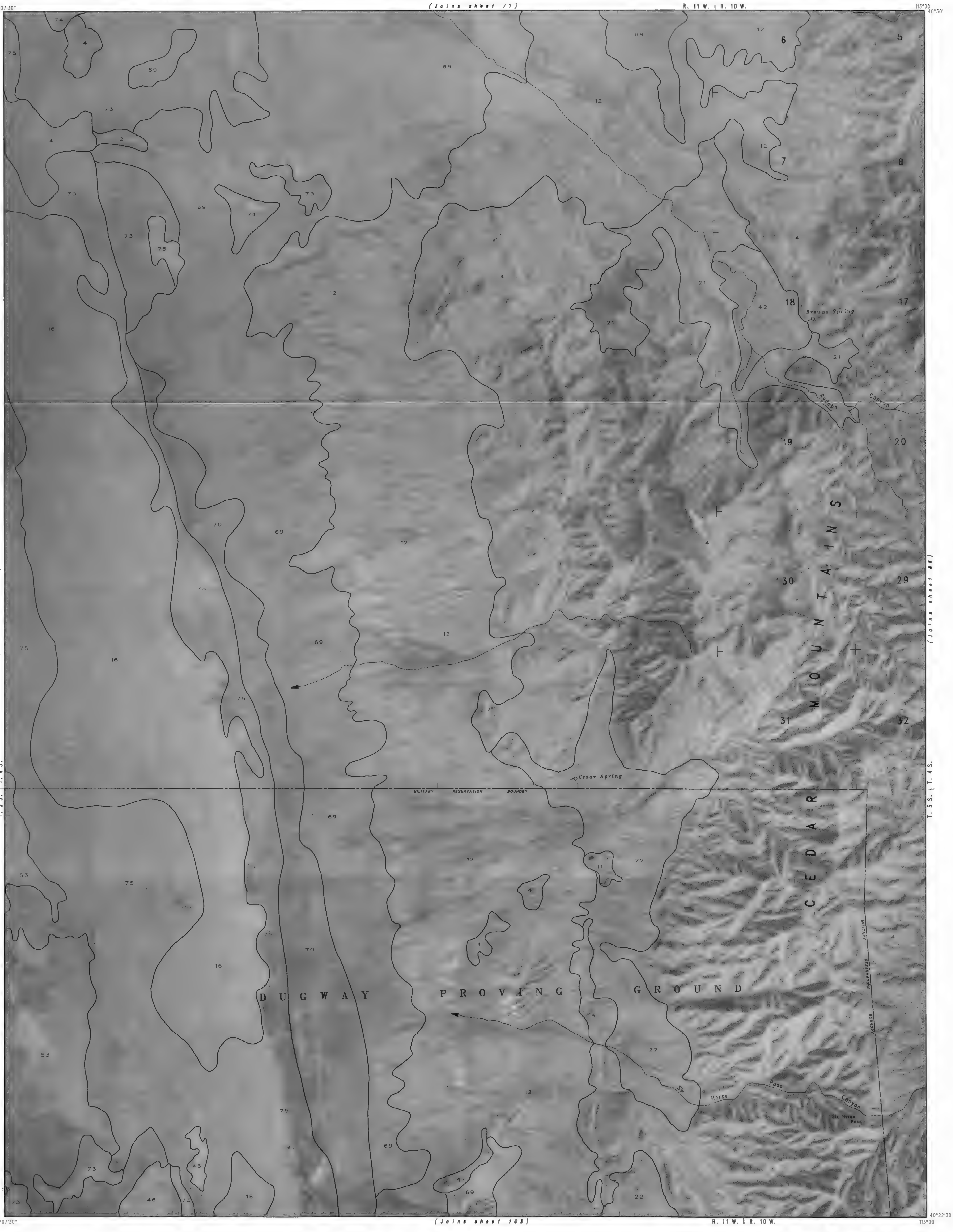
TOOELE AREA, UTAH AND NEVADA NO. 86

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

Q1509 - Wig Mountain Nw



TOOELE AREA, UTAH AND NEVADA NO. 87

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

N

SHEET NO. 87 OF 164
Q1510 - Wig Mountain Ne

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 88
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

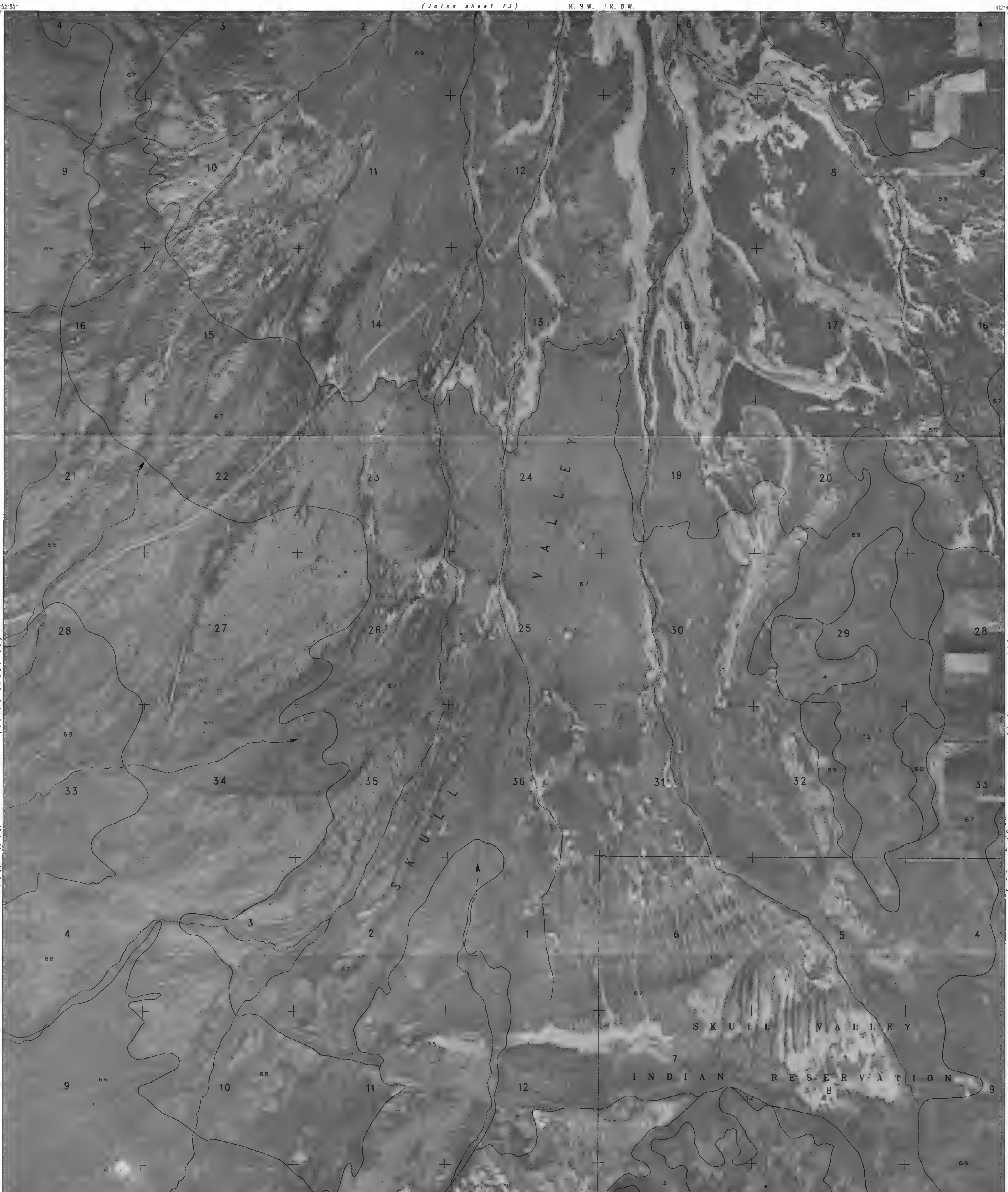
TOOELE AREA, UTAH AND NEVADA NO. 88

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 88 OF 164
Q1511 – Tabbys Peak



TOOELE AREA, UTAH AND NEVADA NO. 89

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 89 OF 164

Q1512 - Hickman Knolls

112°45' 40°30' (Joins sheet 74) R. 8 W. | R. 7 W. 112°37'30" 40°30'

(Joins sheet 89) (Joins sheet 91) T. 5 S. | T. 4 S.

40°22'30" 112°45' (Joins sheet 106) R. 8 W. | R. 7 W. 40°22'30" 112°37'30"

TOOELE AREA, UTAH AND NEVADA NO. 90

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1513 – Deseret Peak West

TOOELE AREA, UTAH AND NEVADA NO. 91

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1514 - Deseret Peak East

R. 6 W. | R. 5 W. (Joins sheet 76)

(Joins sheet 91) (Joins sheet 93)

T. 5 S. | T. 4 S.

R. 6 W. | R. 5 W. (Joins sheet 108)

TOOELE AREA, UTAH AND NEVADA NO. 92

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 92 OF 164

Q1515 – South Mountain

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

TOOELE AREA, UTAH AND NEVADA NO. 94

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1517 – Lowe Peak

TOOELE AREA, UTAH AND NEVADA NO. 95

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

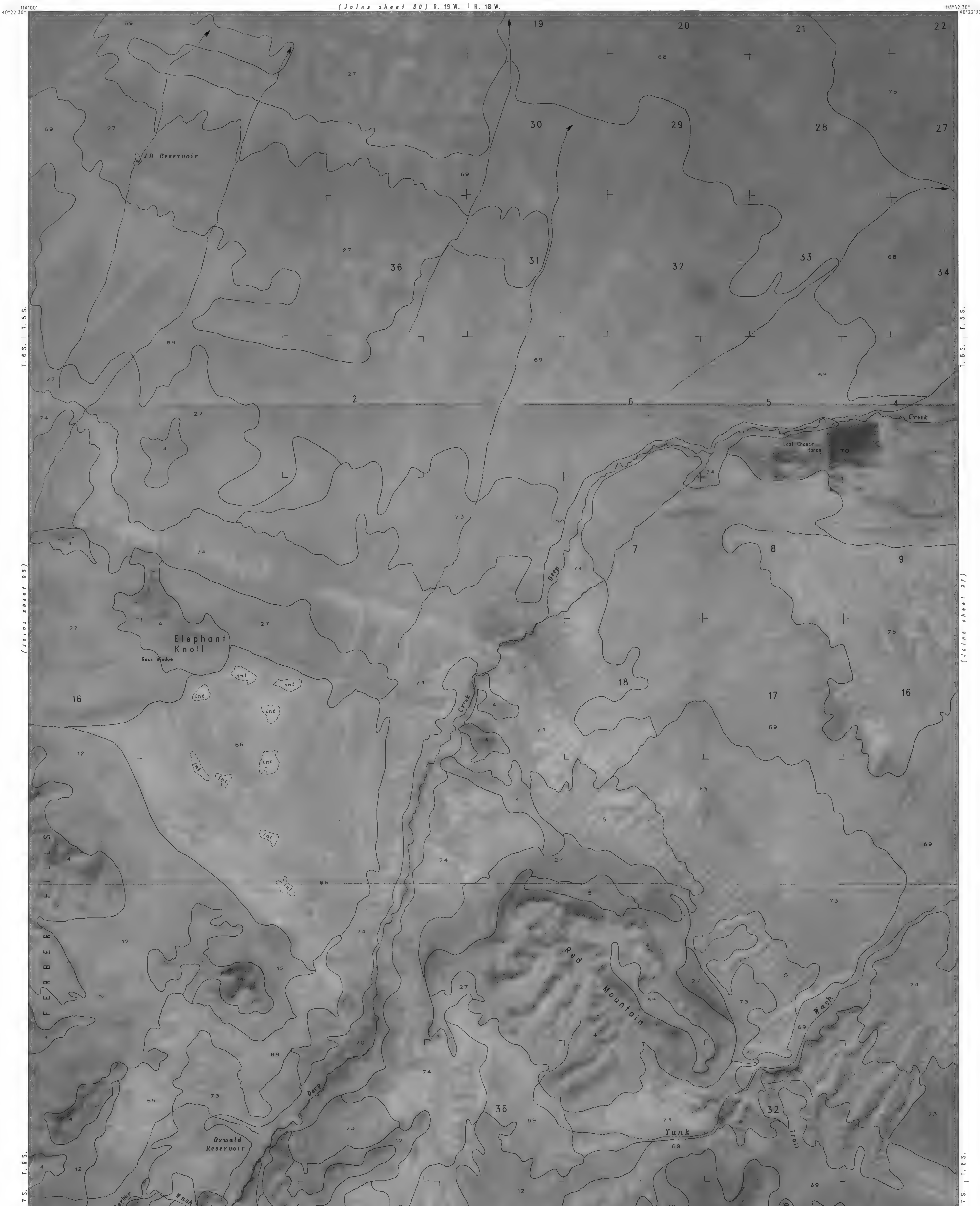
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 95 OF 164

Q1602 - Utah Peak



TOOELE AREA, UTAH AND NEVADA NO. 96

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

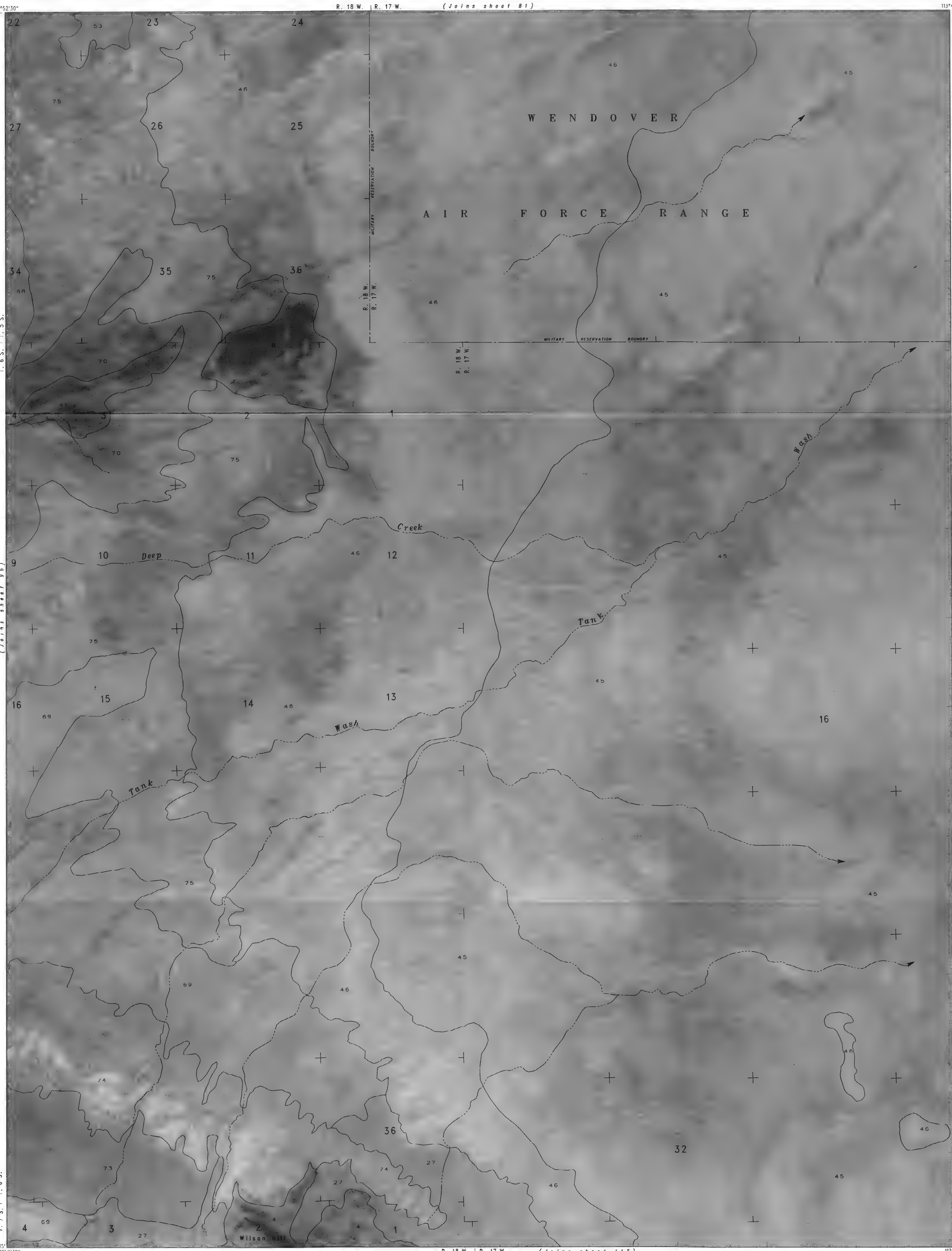
N

SHEET NO. 96 OF 164

Q1603 - Elephant Knoll

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 97
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 97

1 MILE | 1/2 | 0 | 1 MILE
1000 | 0 | 1000 | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 FEET
1 | .5 | 0 | 1 KILOMETER

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 97 OF 164

Q1604 - Elephant Knoll Se

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 99
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

113°37'30" 40°22'30" R. 16 W. | R. 15 W. (Joins sheet 83) 113°30' 40°22'30"

T. 5 S. | T. 6 S. (Joins sheet 98) T. 7 S. | T. 6 S.

T. 6 S. | T. 5 S. (Joins sheet 100) T. 7 S. | T. 6 S.

40°15' 113°37'30" R. 16 W. | R. 15 W. (Joins sheet 115) 40°15' 113°30'

TOOELE AREA, UTAH AND NEVADA NO. 99

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 99 OF 164
Q1606 – Gold Hill 1 Se

TOOELE AREA, UTAH AND NEVADA NO. 100

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 100 OF 164
Q1607 – Wildcat Mountain Sw

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 101
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 101

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 101 OF 164

Q1608 - Wildcat Mountain Se

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 102
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 102

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 102 OF 164
Q1609 – Wig Mountain Sw

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 103
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

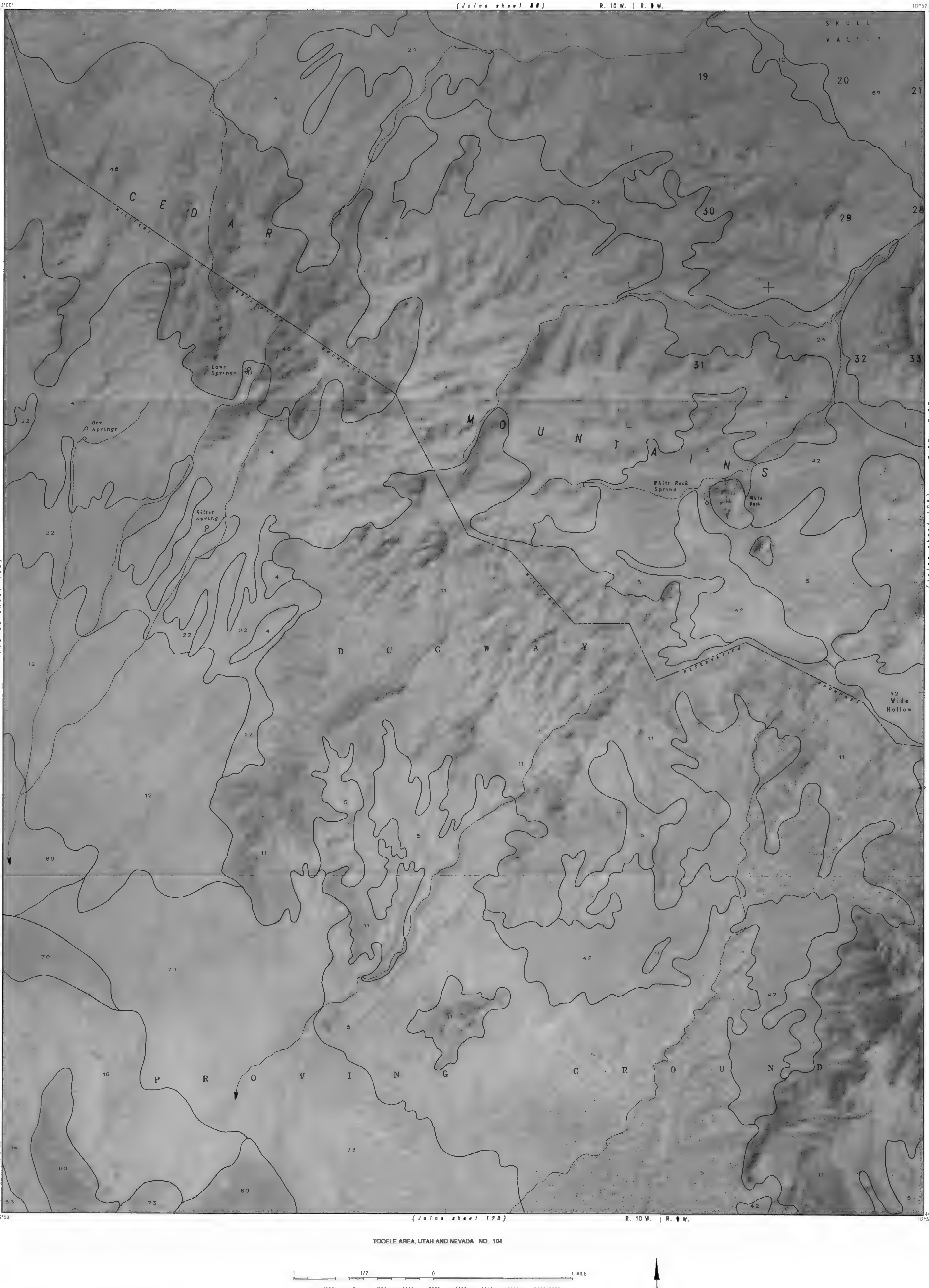
TOOELE AREA, UTAH AND NEVADA NO. 103

1 MILE
1/2
0
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 103 OF 164

Q1610 – Wig Mountain



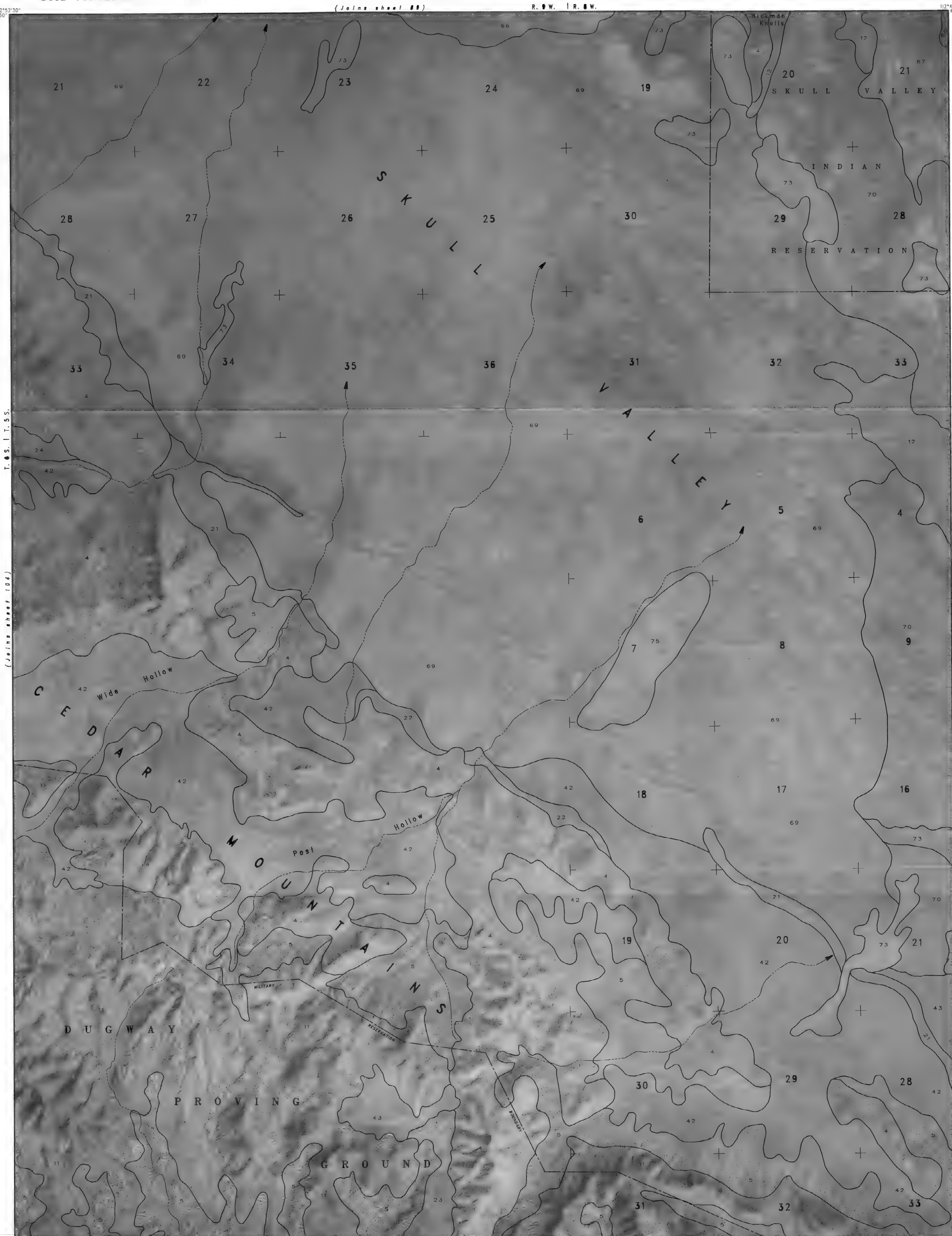
TOOELE AREA, UTAH AND NEVADA NO. 104

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



TOOELE AREA, UTAH AND NEVADA NO. 105

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 105 OF 164

Q1612 - Tabbys Peak Se

TOOELE AREA, UTAH AND NEVADA NO. 106

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1613 – Terra

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 107
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 107

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

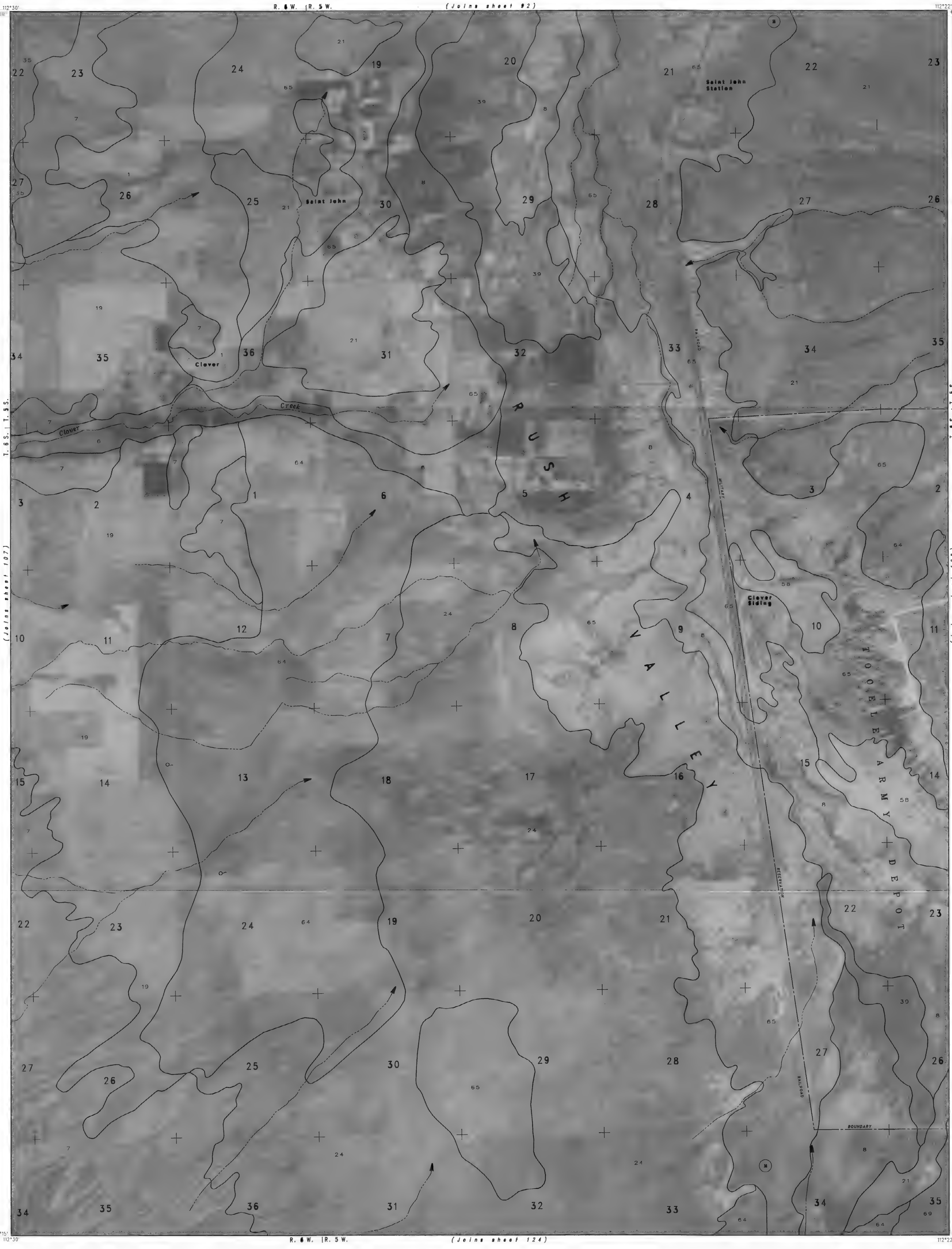
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 107 OF 164

Q1614 - Johnson Pass



TOOELE AREA, UTAH AND NEVADA NO. 108

1 — 1/2 — 0 — 1 MILE
1000 — 0 — 1000 — 2000 — 3000 — 4000 — 5000 — 6000 — 7000 FEET
1 — .5 — 0 — 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 108 OF 164
Q1615 – Saint John

TOOELE AREA, UTAH AND NEVADA NO. 109

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

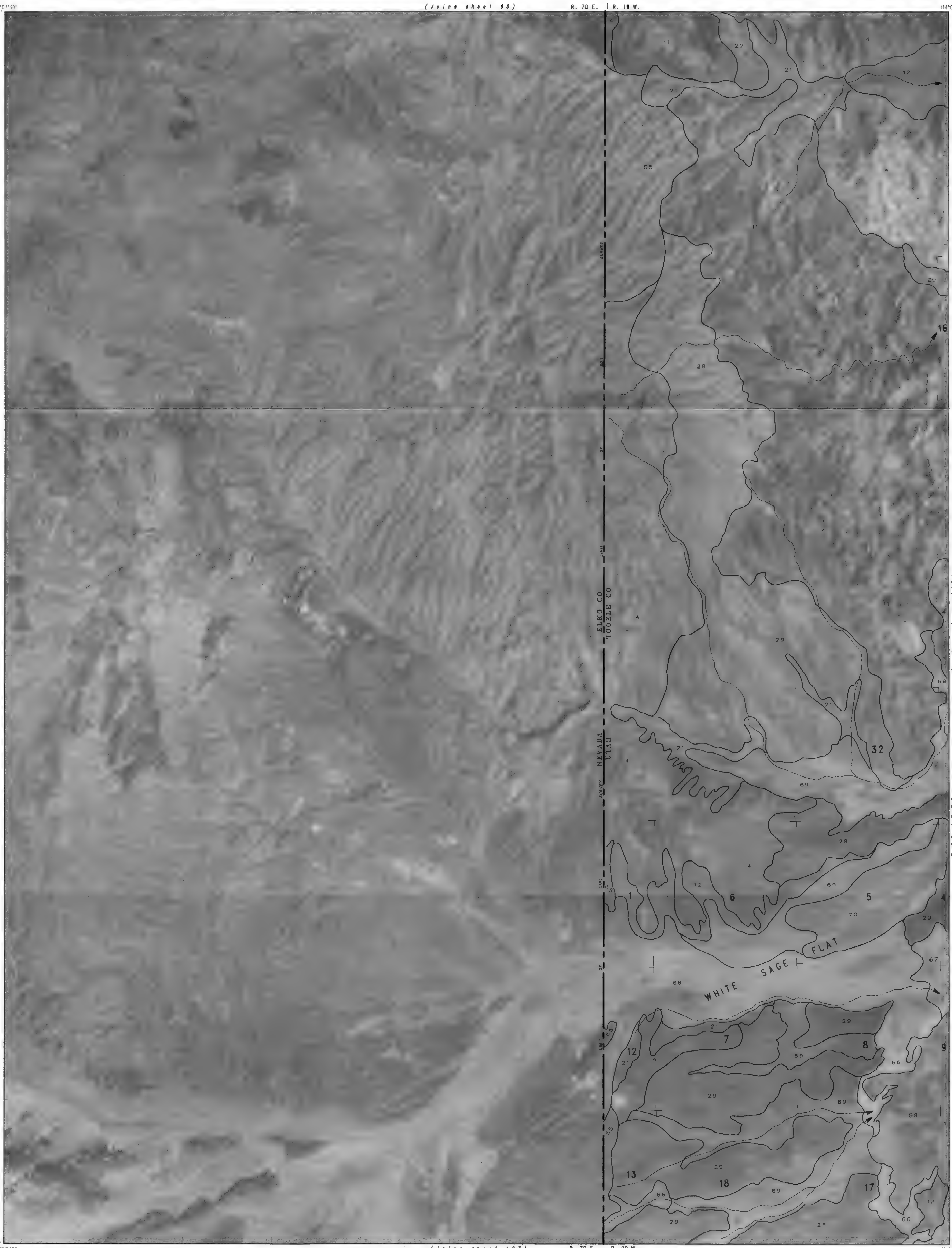
N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

TOOELE AREA, UTAH AND NEVADA NO. 110

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



TOOELE AREA, UTAH AND NEVADA NO. 111

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

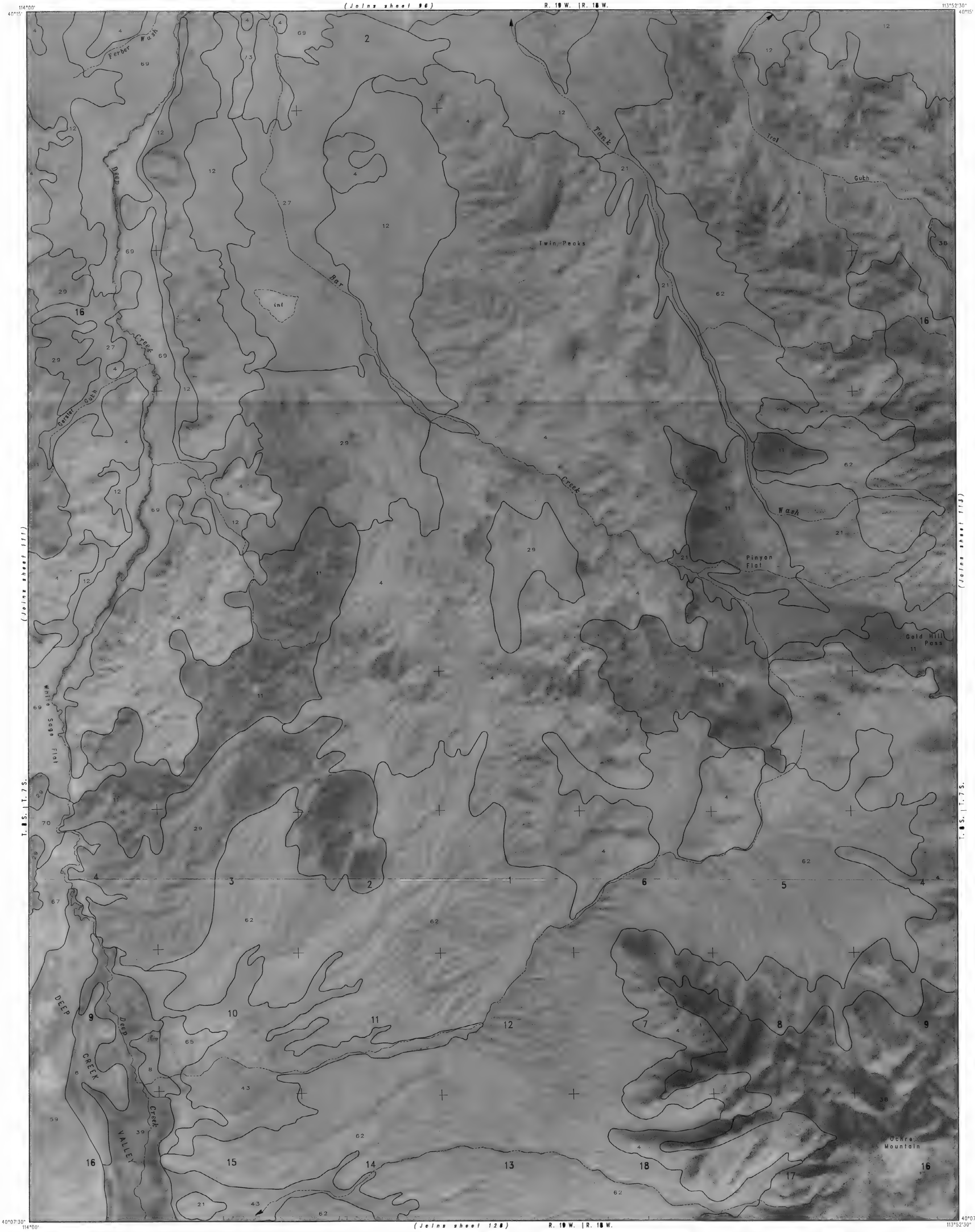
N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1702 - Ferber Peak

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 112
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 112

1 | 1/2 | 0 | 1 MILE
1000 | 0 | 1000 | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 FEET
1 | .5 | 0 | 1 KILOMETER

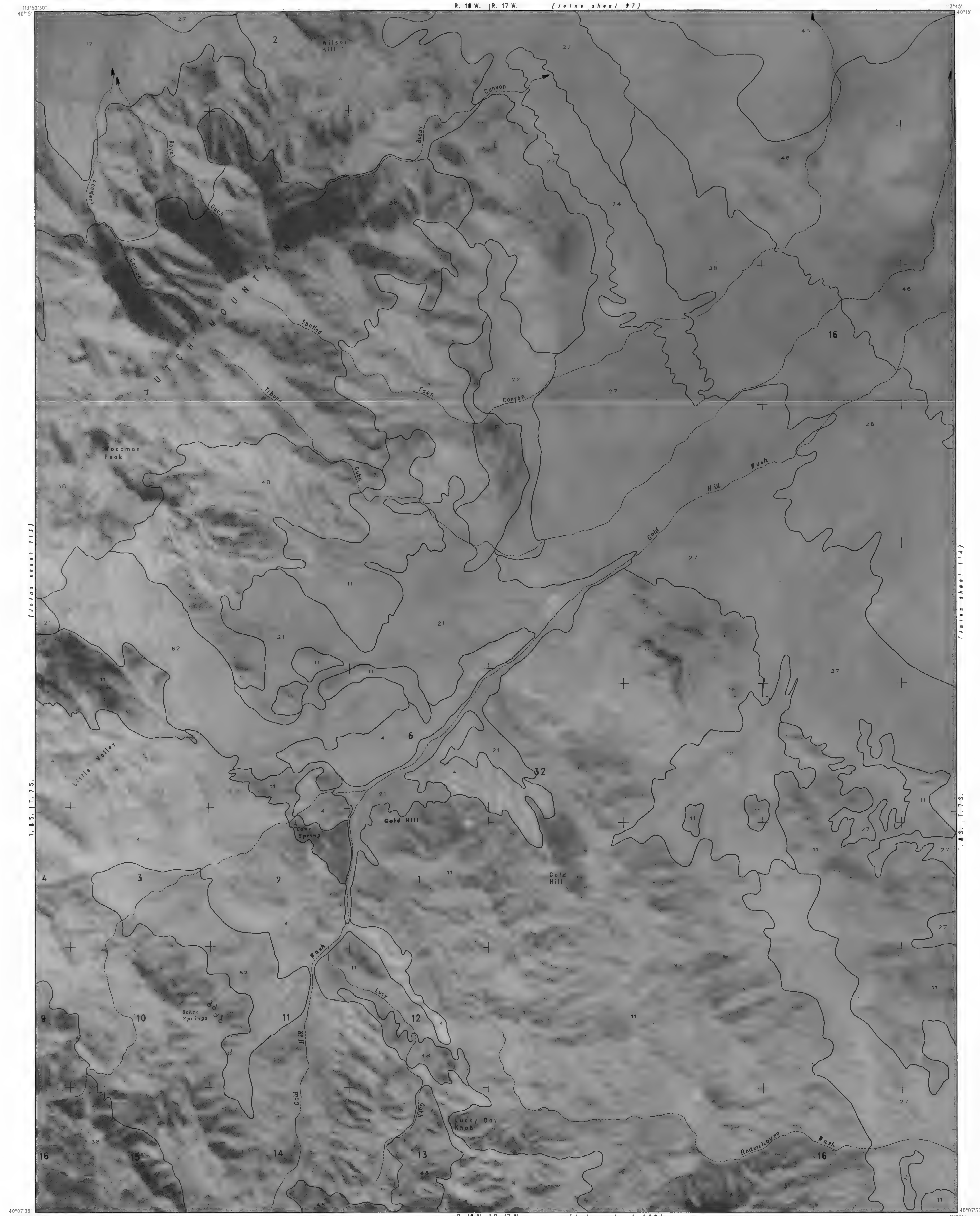
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

SHEET NO. 112 OF 164

Q1703 – Ochre Mountain



TOOELE AREA, UTAH AND NEVADA NO. 113

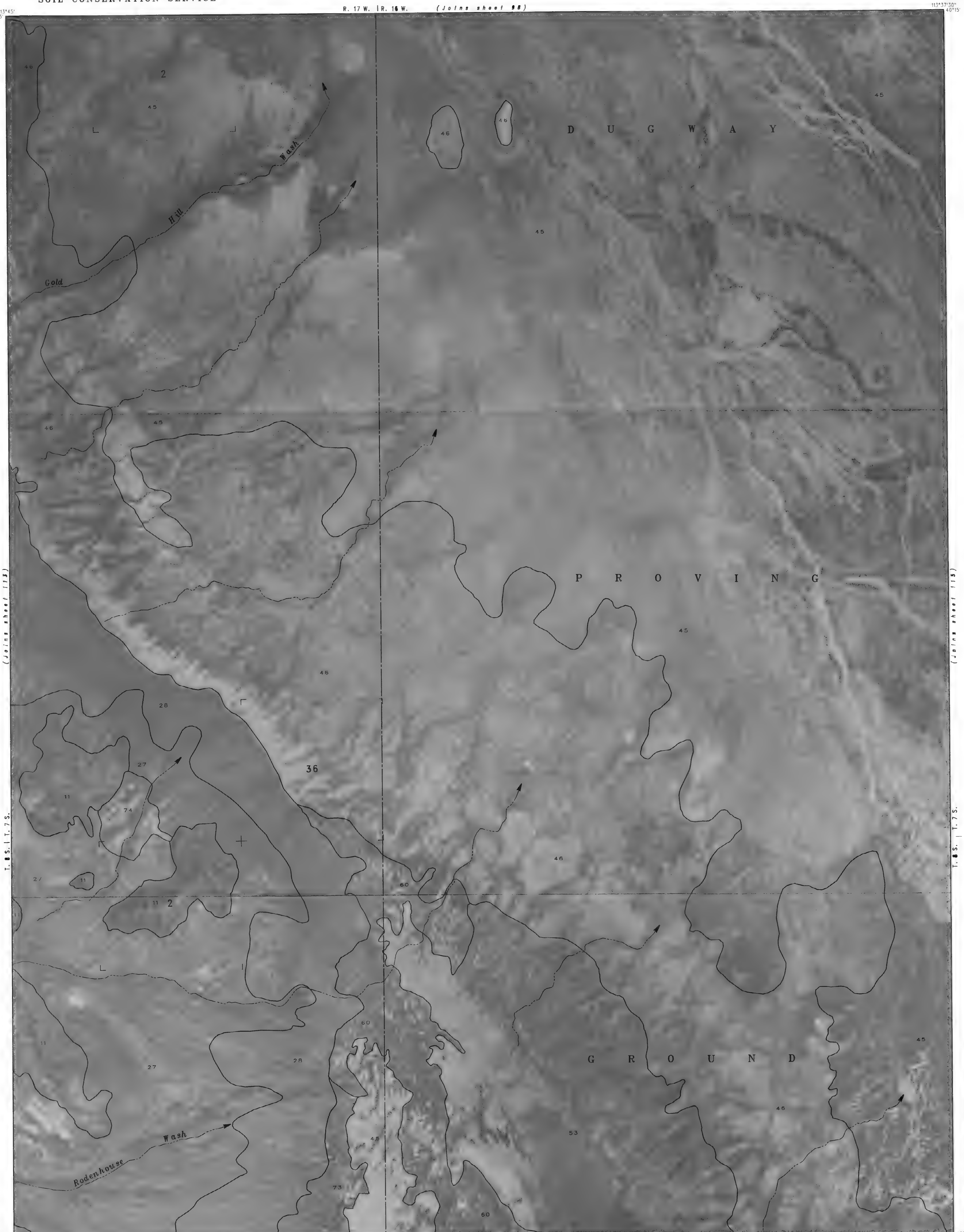
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 113 OF 164

Q1704 - Gold Hill



TOOELE AREA, UTAH AND NEVADA NO. 114

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 114 OF 164

Q1705 - Gold Hill 4 Nw

TOOELE AREA, UTAH AND NEVADA NO. 115

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1706 - Gold Hill 4 Ne

TOOELE AREA, UTAH AND NEVADA NO. 116

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

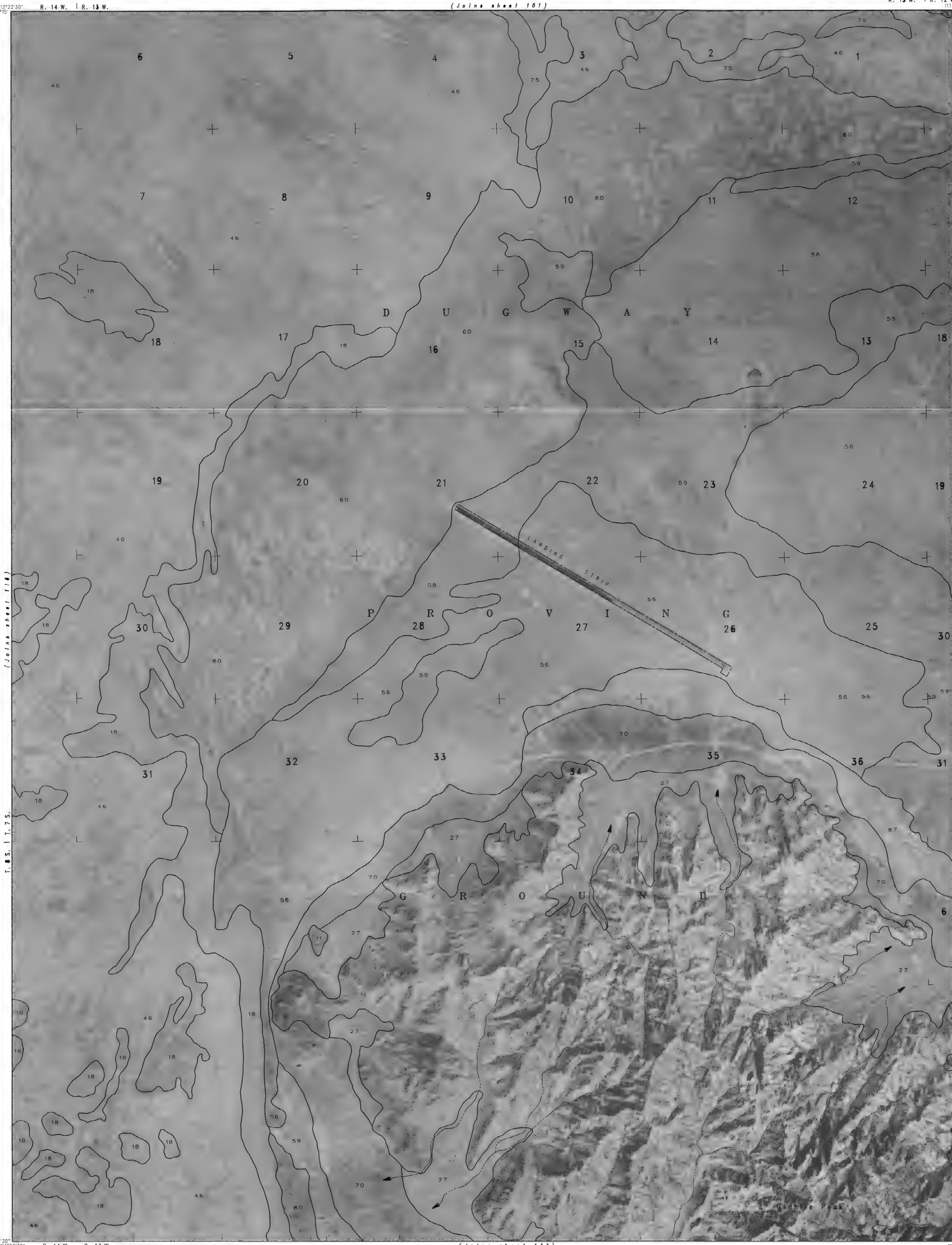
Scale 1:24,000

N

SHEET NO. 116 OF 164

Q1707 - Granite Peak Nw

113°22'30"
40°15'
R. 14 W. | R. 13 W.
(Joins sheet 101)
R. 13 W. | R. 12 W.
113°15'
40°15'



40°07'30"
113°22'30"
R. 14 W. | R. 13 W.
(Joins sheet 133)
40°07'30"
113°15'
R. 13 W. | R. 12 W.

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 117 OF 164
Q1708 – Granite Peak

TOOELE AREA, UTAH AND NEVADA NO. 118

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1709 - Dugway Proving Grounds Nw

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 119
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 119

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

SHEET NO. 119 OF 164

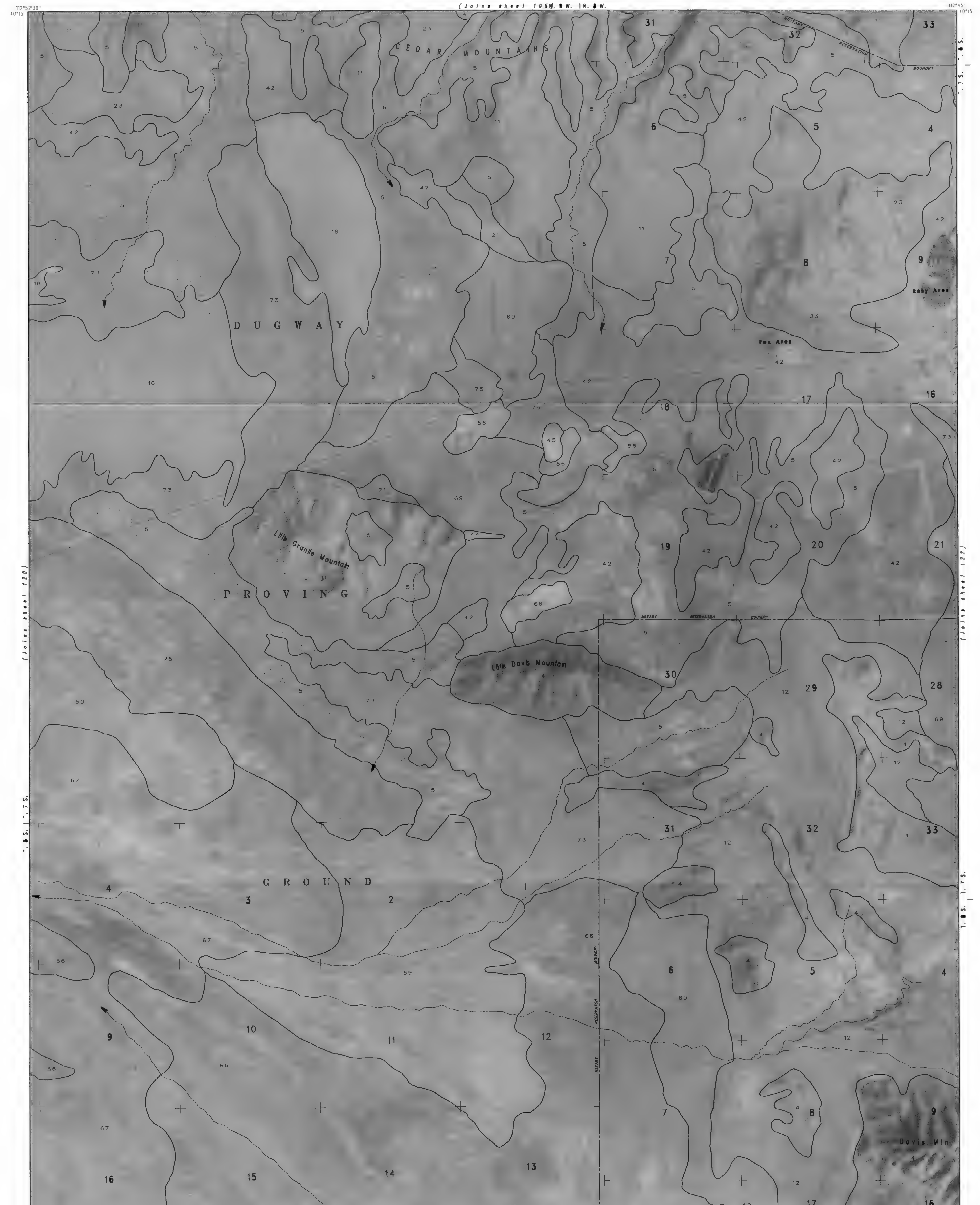
Q1710 – Dugway Proving Grounds Ne

TOOELE AREA, UTAH AND NEVADA NO. 120

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N



TOOELE AREA, UTAH AND NEVADA NO. 121

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 122
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 122

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 122 OF 164

Q1713 - Davis Knolls

TOOELE AREA, UTAH AND NEVADA NO. 123

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

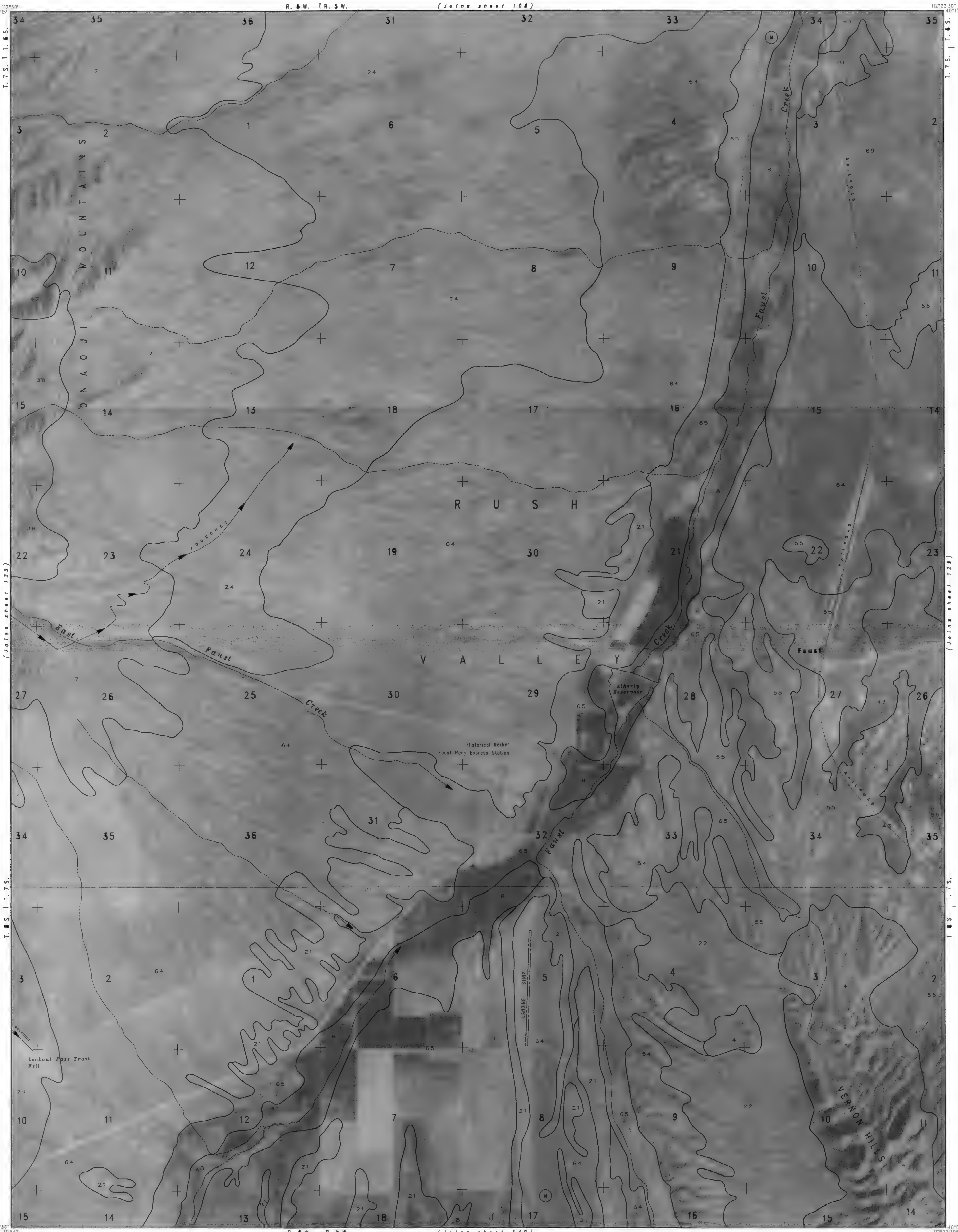
1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 123 OF 164

Q1714 - Onaqui Mts South



TOOELE AREA, UTAH AND NEVADA NO. 124

1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 125
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 125

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

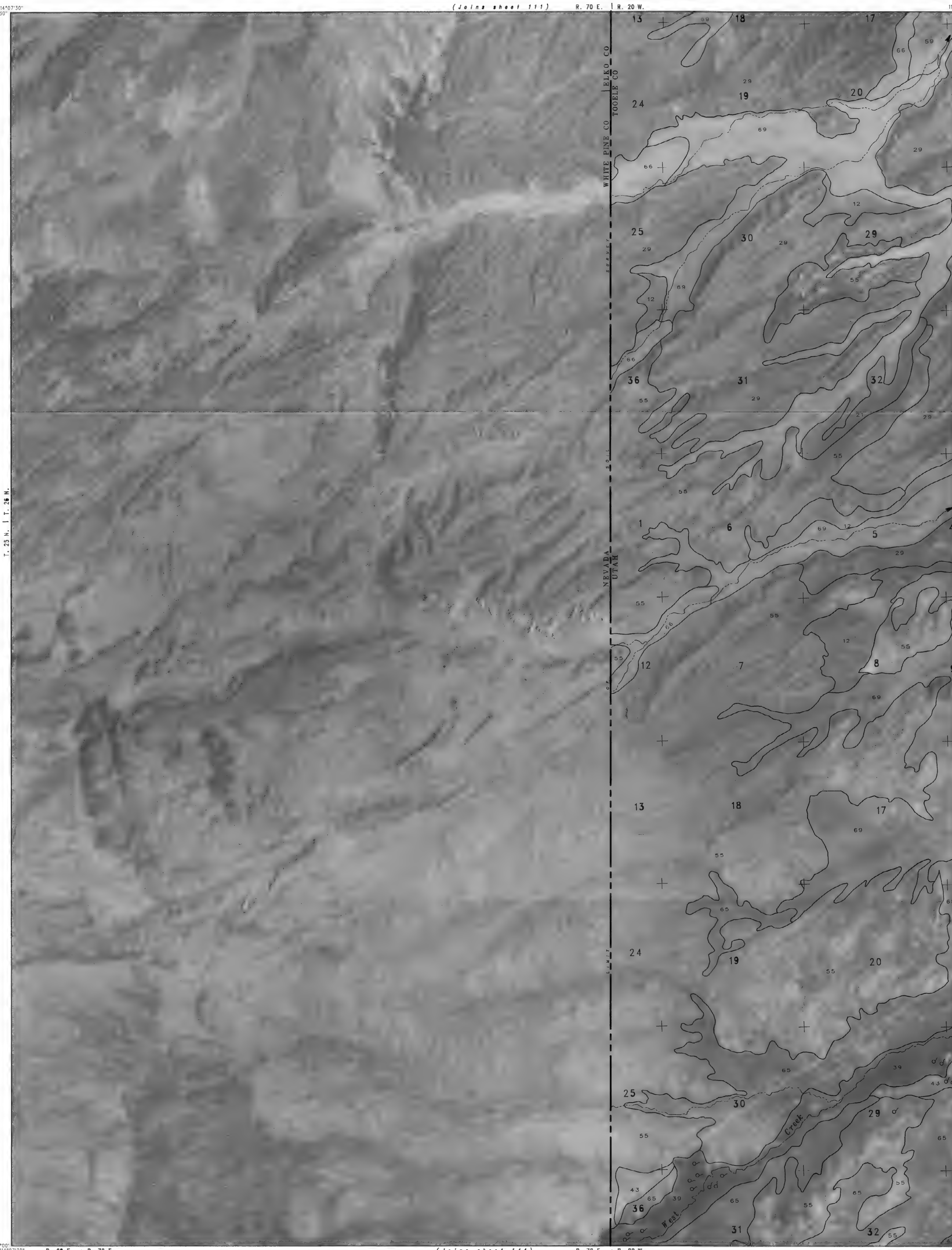
SHEET NO. 125 OF 164
Q1716 – Vernon Ne

TOOELE AREA, UTAH AND NEVADA NO. 126

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



TOOELE AREA, UTAH AND NEVADA NO. 127

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

SHEET NO. 127 OF 164

Q1802 - Ferber Peak SE

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 128
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 128

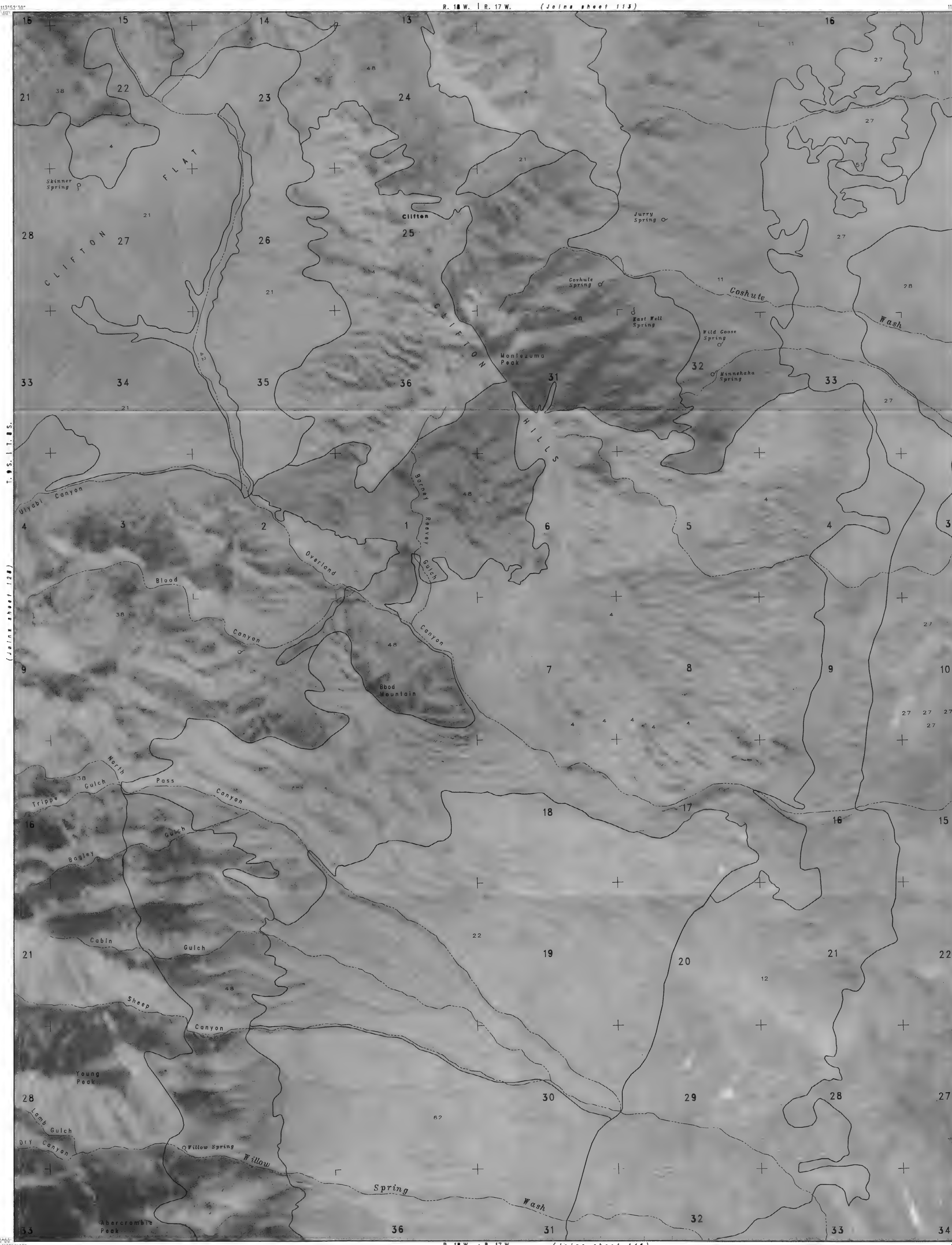
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

SHEET NO. 128 OF 164
Q1803 – Ibapah

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 129
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 129

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

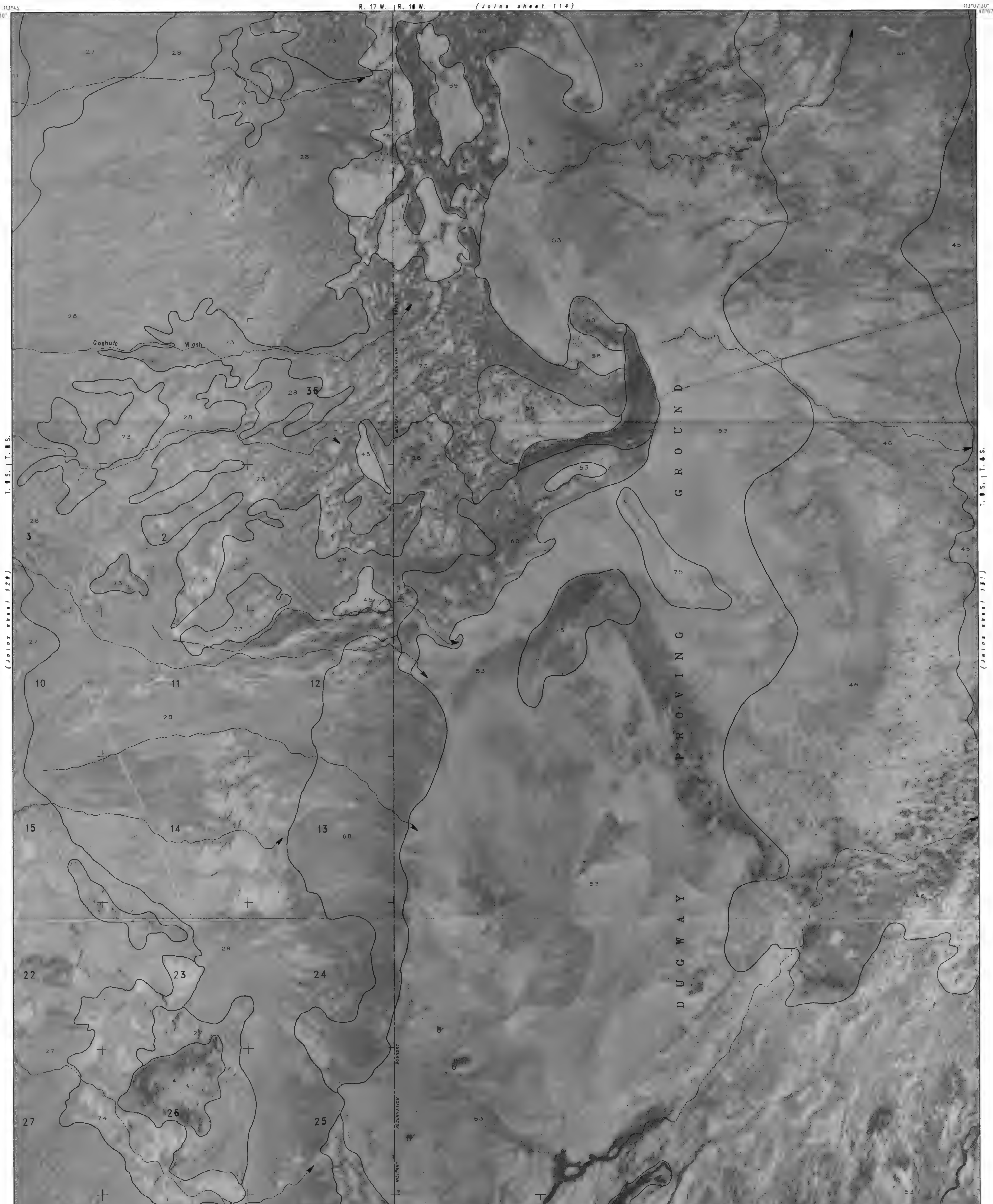
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 129 OF 164

Q1804 - Clifton



TOOELE AREA, UTAH AND NEVADA NO. 130

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1805 – Gold Hill 4 Sw

TOOELE AREA, UTAH AND NEVADA NO. 131

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

SHEET NO. 131 OF 164

Q1806 - Gold Hill 4 Se

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 132
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 132

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

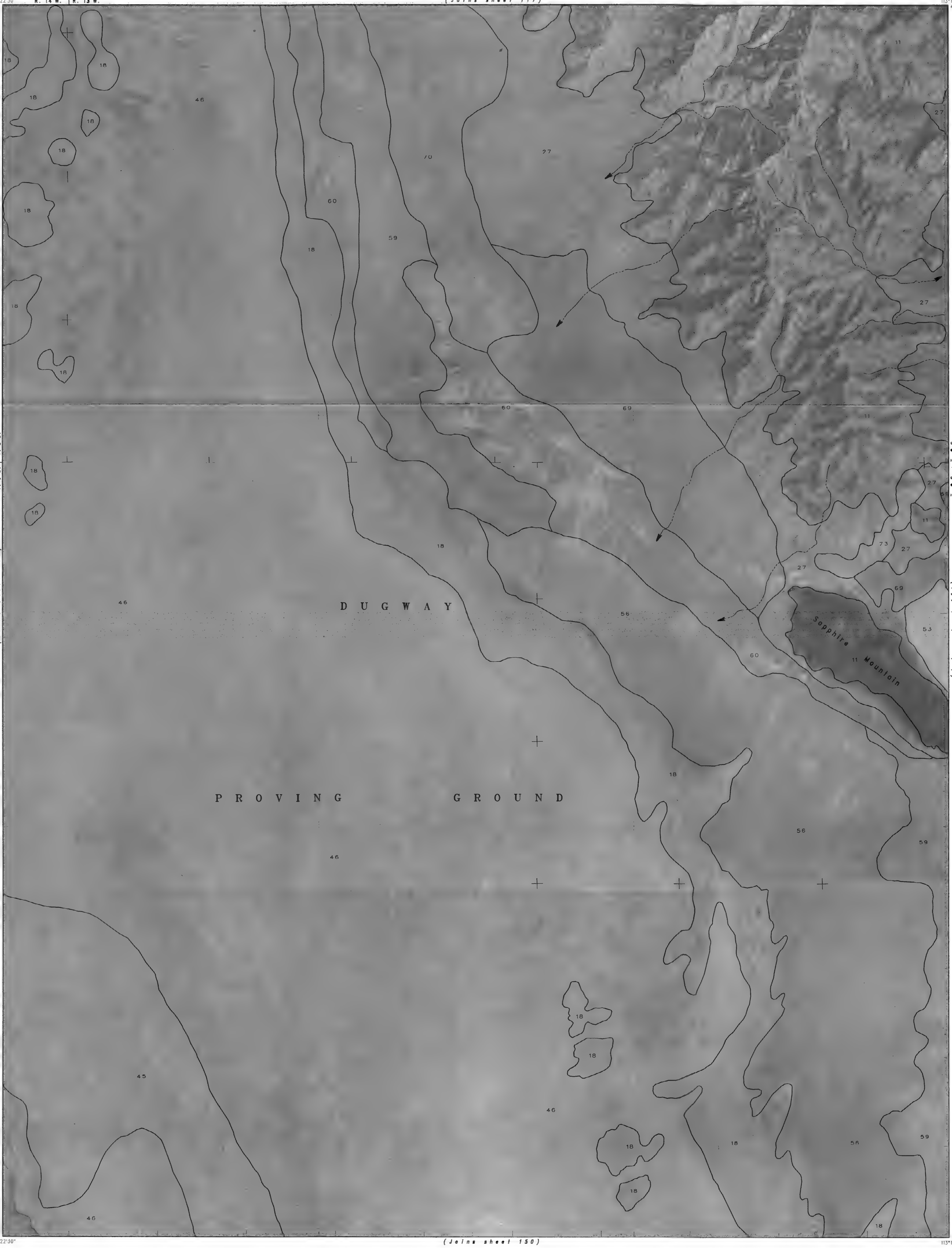
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 132 OF 164
Q1807 – Granite Peak Sw

113°22'30" R. 14 W. | R. 13 W. (Joins sheet 117) R. 13 W. | R. 12 W. 113°15'

40°07'30" 40°07'30"



40°00' 40°00'
113°22'30" (Joins sheet 150) 113°15'

TOOELE AREA, UTAH AND NEVADA NO. 133

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

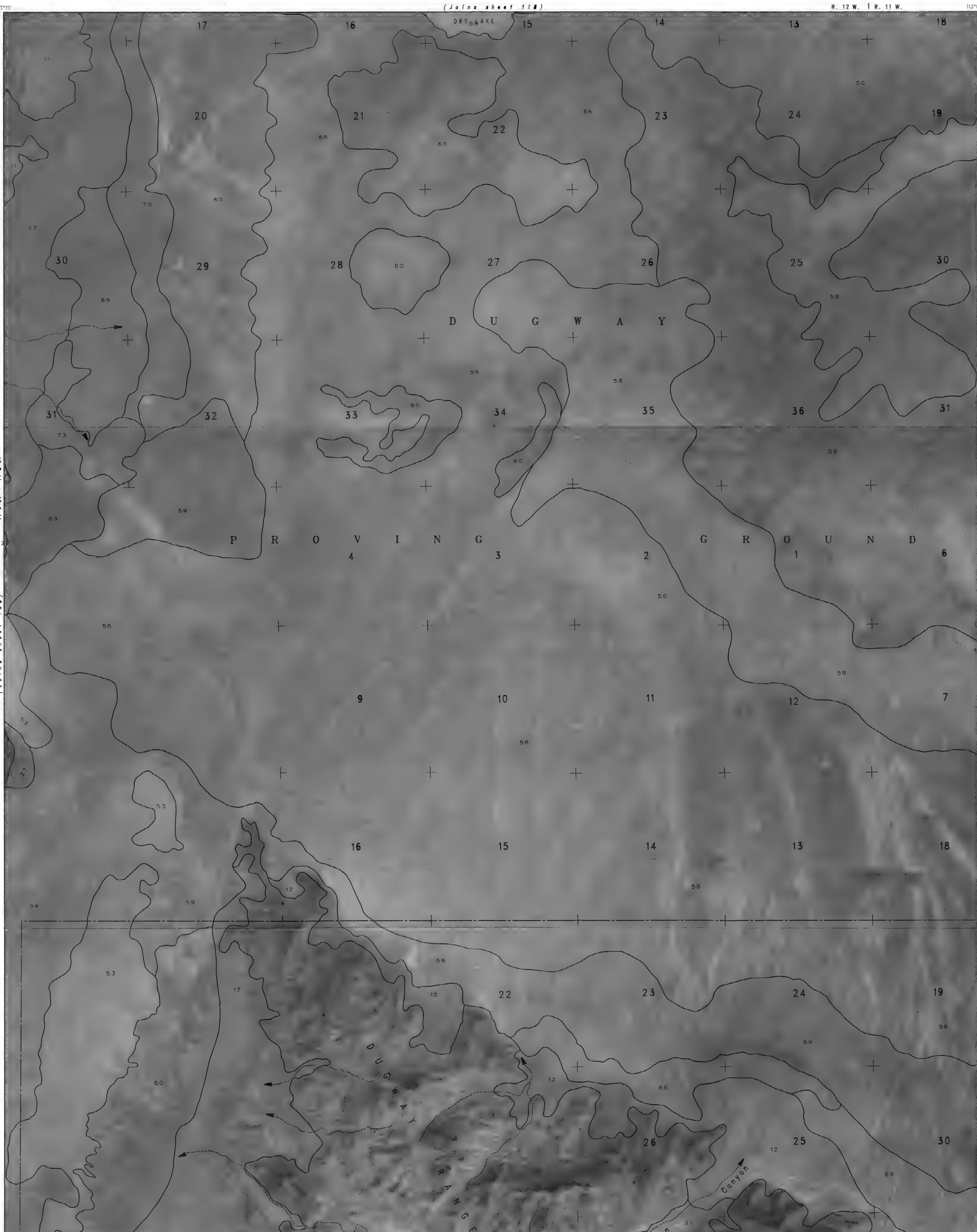
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1808 – Granite Peak Se



TOOELE AREA, UTAH AND NEVADA NO. 134

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

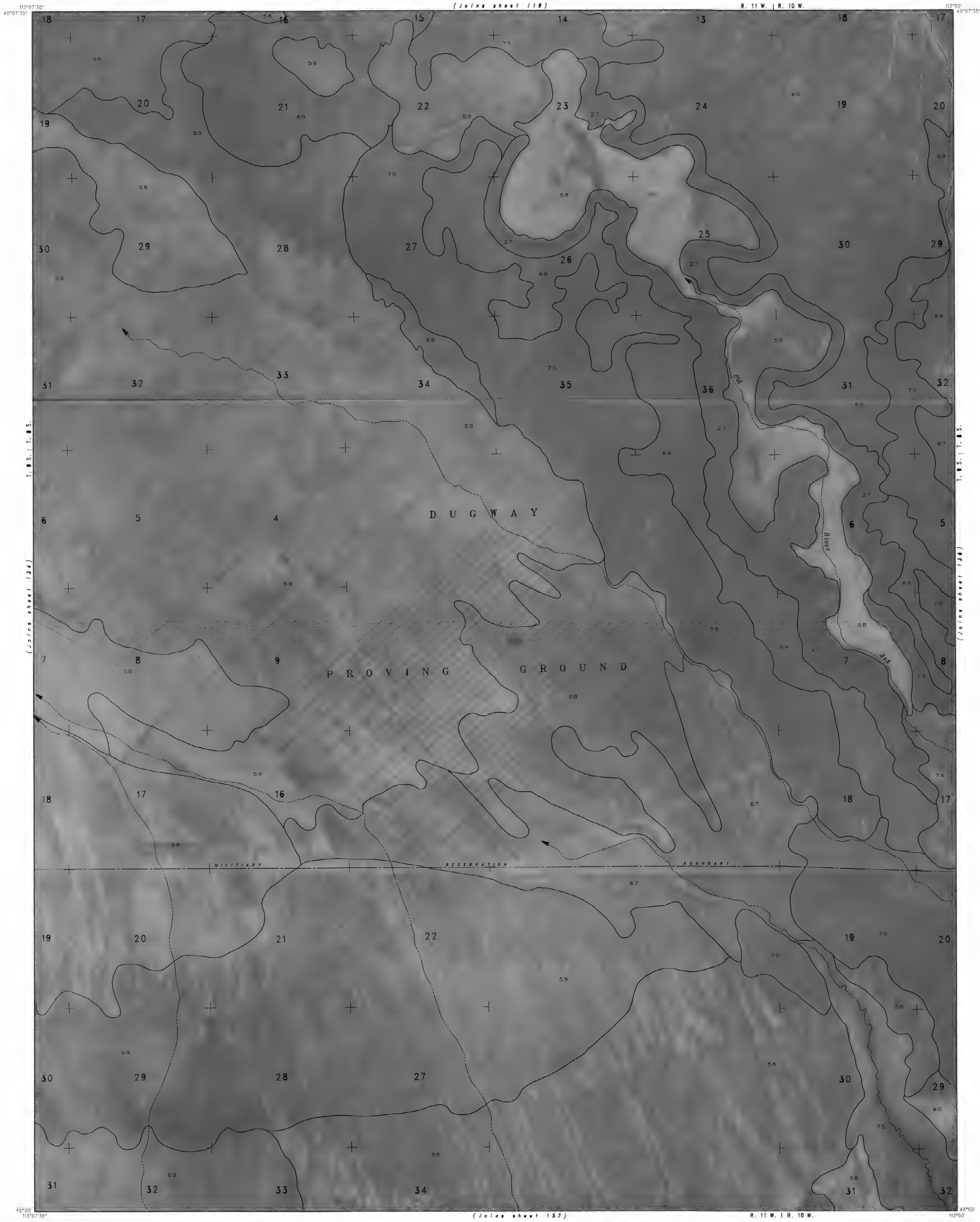
Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1970 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

SHEET NO. 134 OF 164

Q1809 - Dugway Proving Grounds Sw



TOOELE AREA, UTAH AND NEVADA NO. 135

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

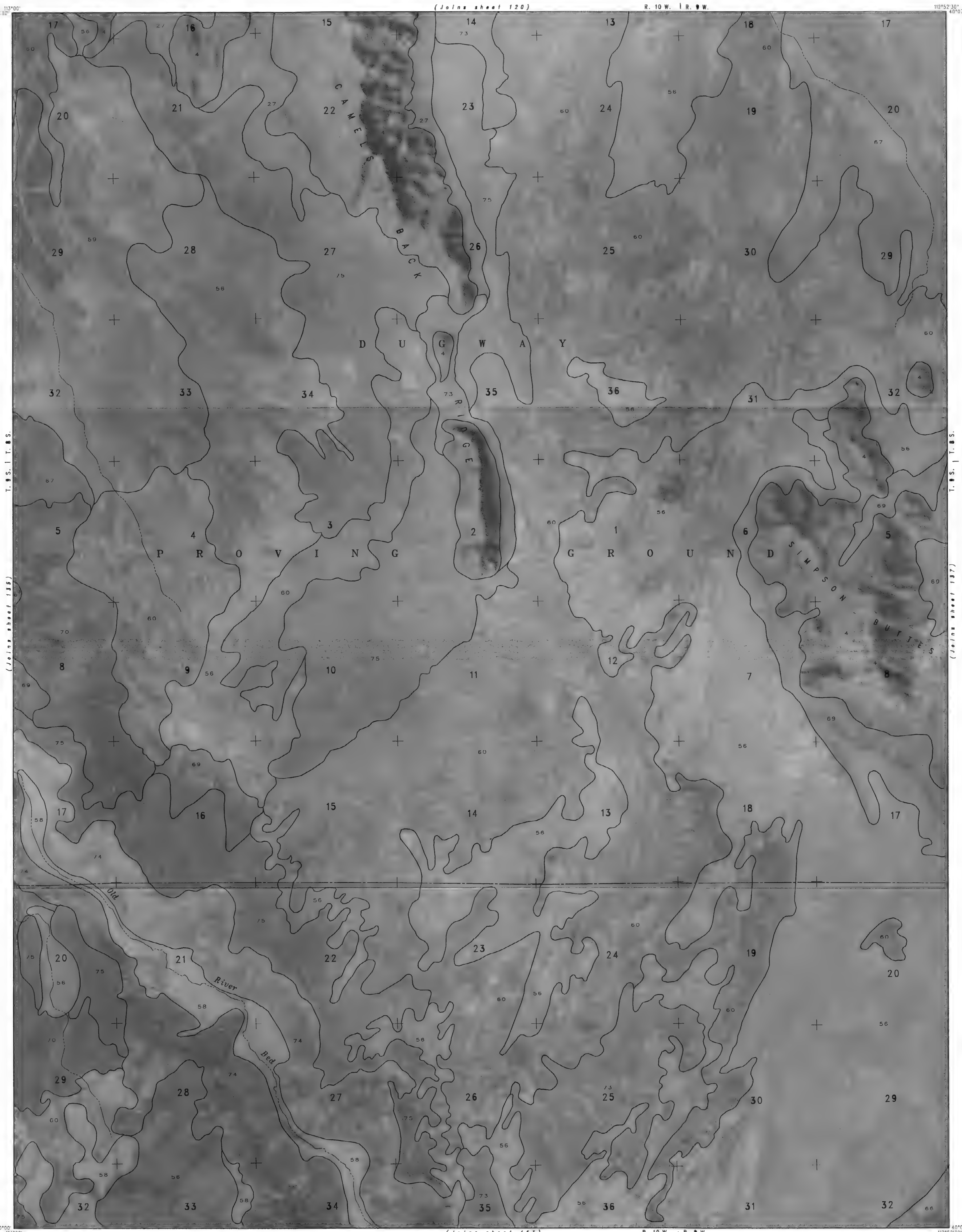
Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 136
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 136

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

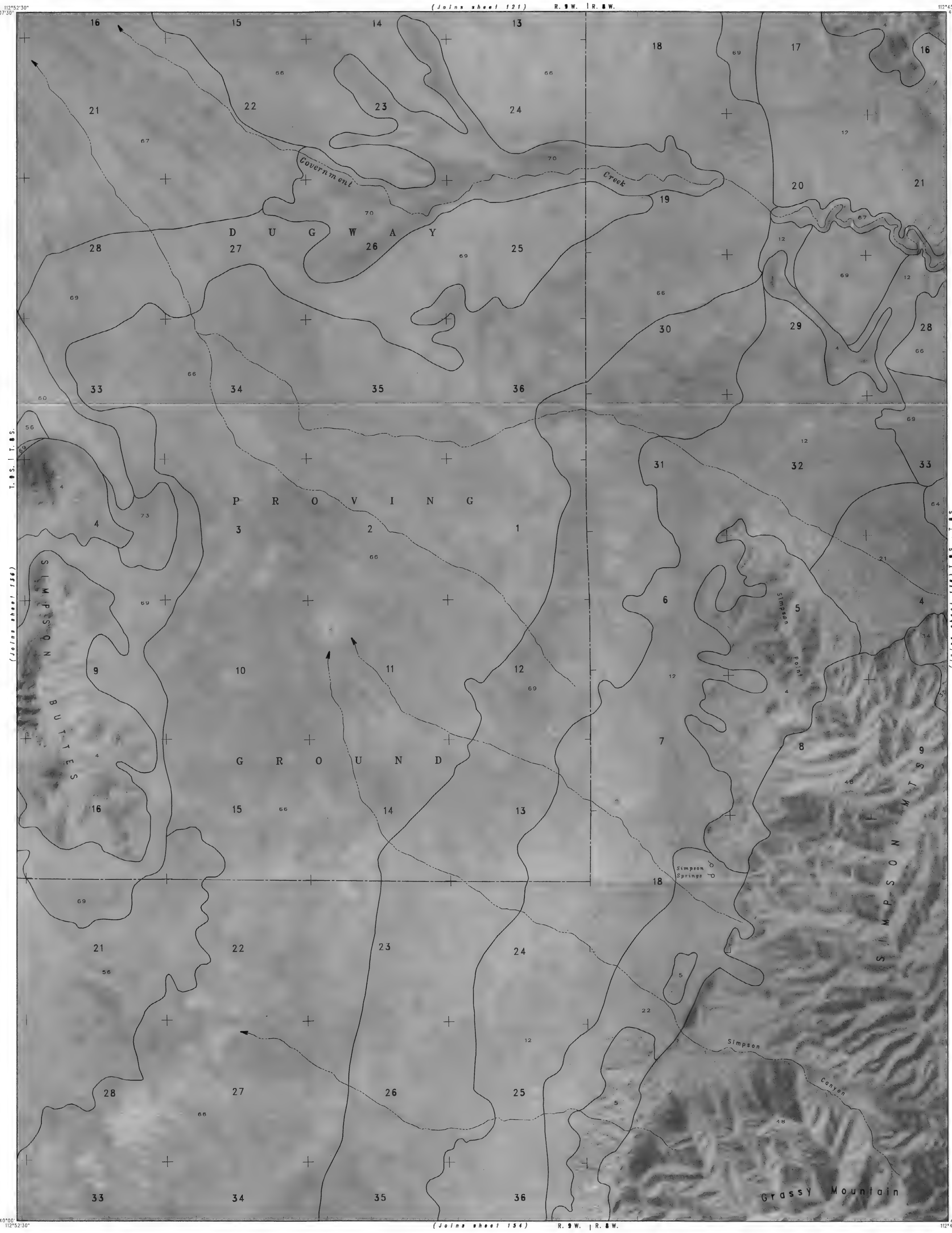
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 136 OF 164

Q1811 - Camels Back Ridge Sw

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 137
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 137

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 137 OF 164
Q1812 – Simpson Springs

TOOELE AREA, UTAH AND NEVADA NO. 138

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

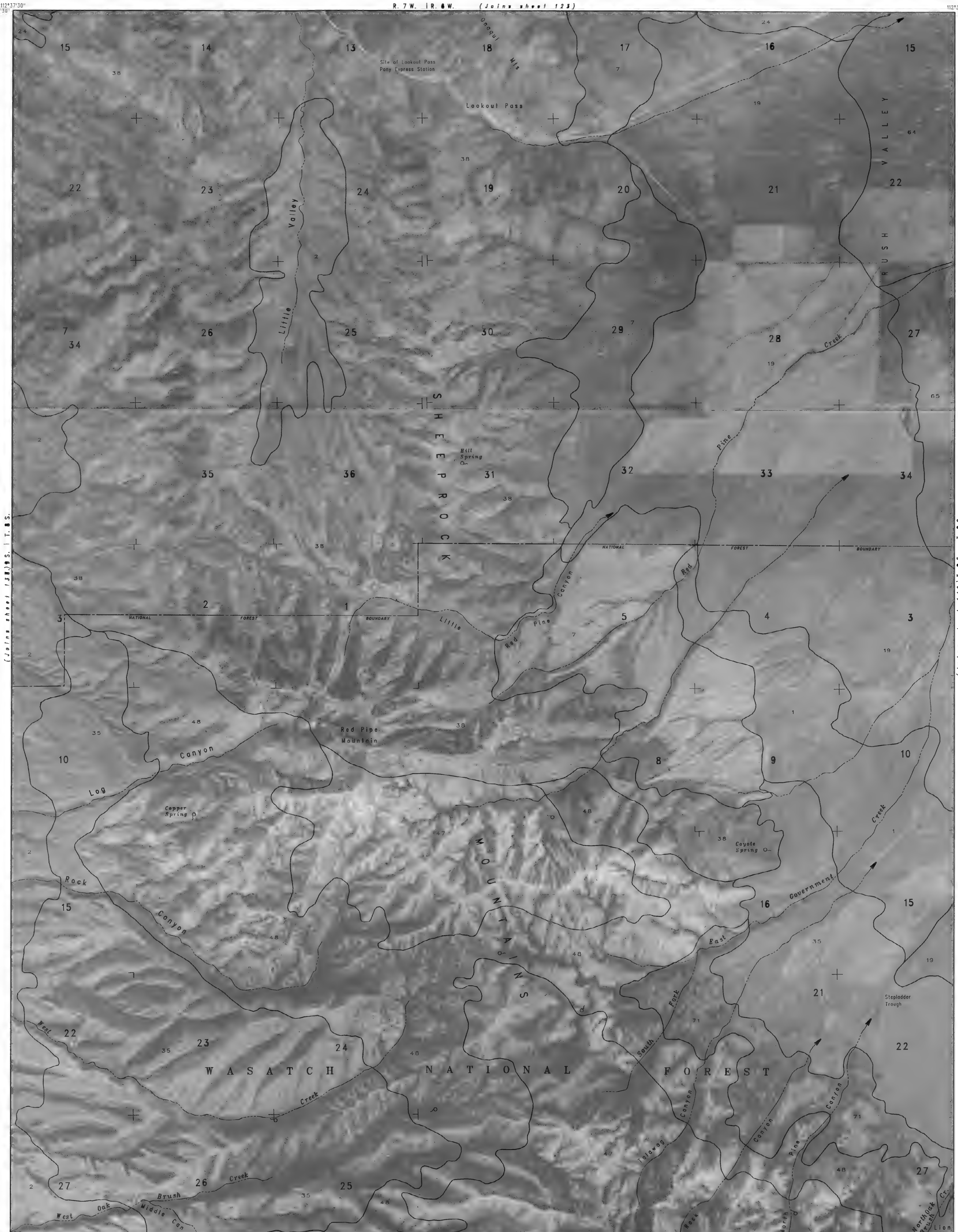
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 139
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

R. 7 W. | R. 6 W. (Joins sheet 123)



R. 7 W. | R. 6 W. (Joins sheet 156)

(Joins sheet 138) 9 S. | T. 9 S.

(Joins sheet 140) T. 9 S. | T. 9 S.

TOOELE AREA, UTAH AND NEVADA NO. 139

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 139 OF 164
Q1814 – Lookout Pass

TOOELE AREA, UTAH AND NEVADA NO. 140

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1815 – Vernon

TOOELE AREA, UTAH AND NEVADA NO. 141

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

Q1816 - Lofgreen

112°15' 40°07'30" R. 4 W. | R. 3 W. (Joins sheet 128) 112°07'30" 40°07'30"

40°00' 112°15' R. 4 W. | R. 3 W. (Joins sheet 159) 40°00' 112°07'30"

TOOELE AREA, UTAH AND NEVADA NO. 142

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

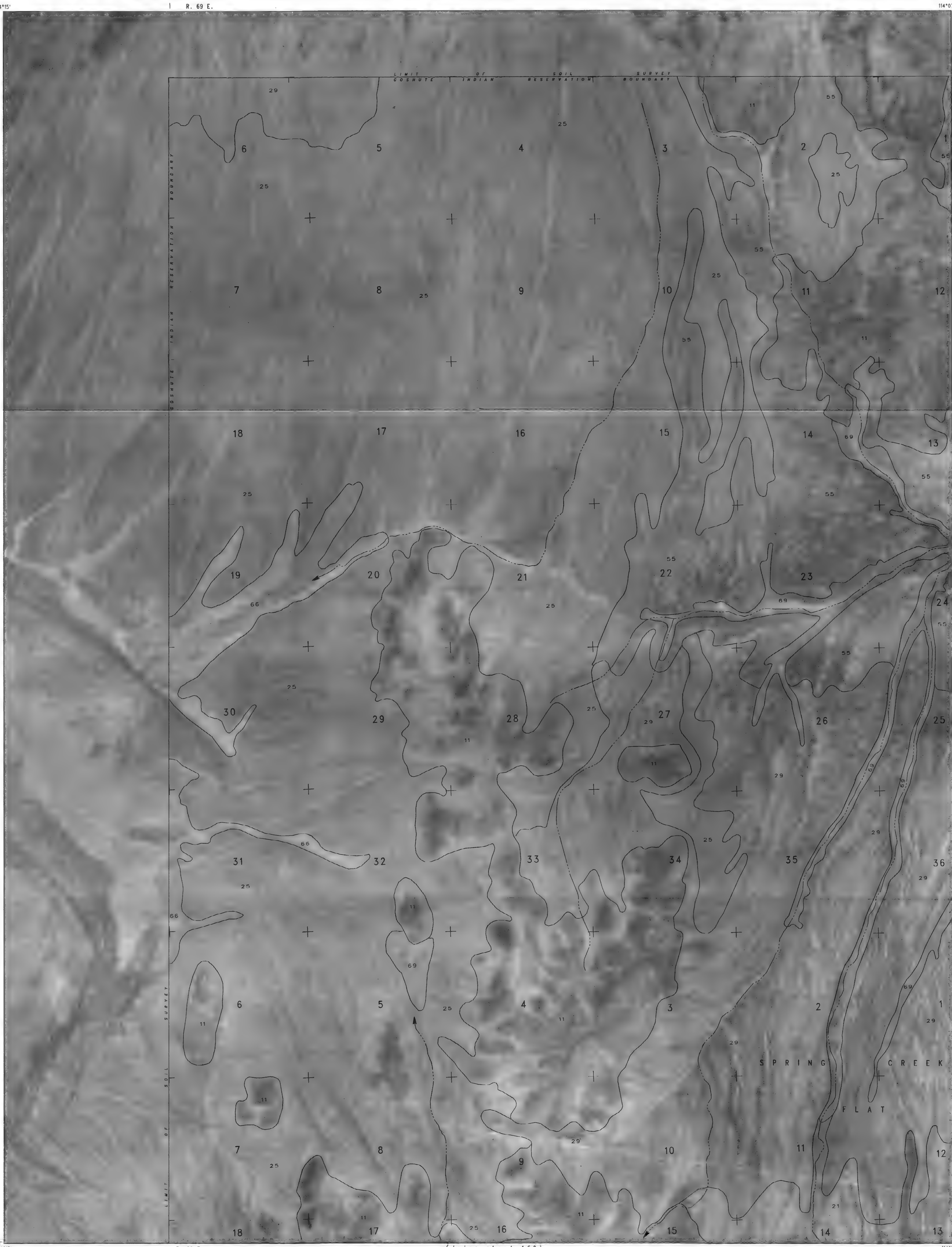
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1817 - Boulter Peak



TOOELE AREA, UTAH AND NEVADA NO. 143

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

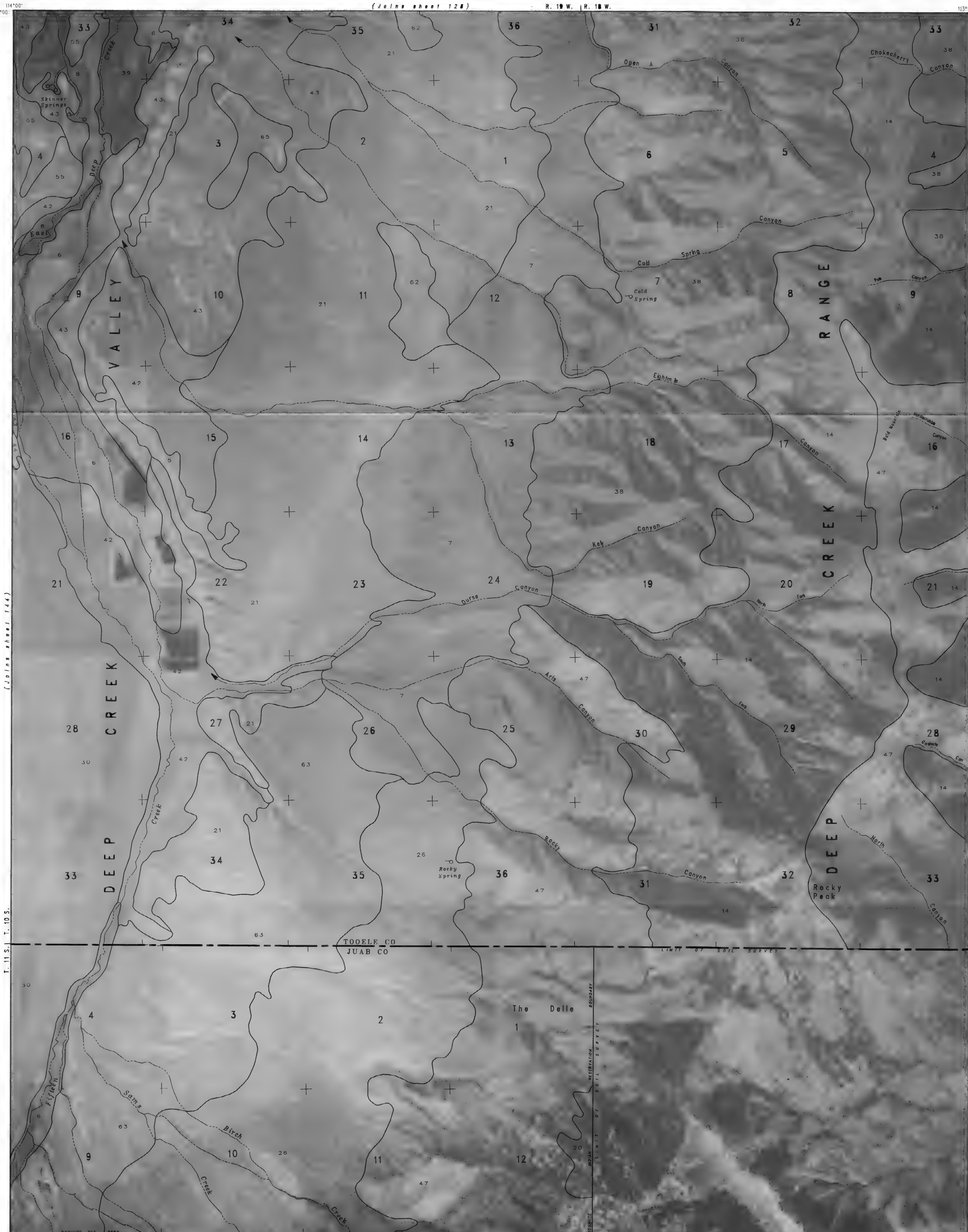
Q1901 - Spring Creek

TOOELE AREA, UTAH AND NEVADA NO. 144

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1902 – Georgetta Ranch



This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

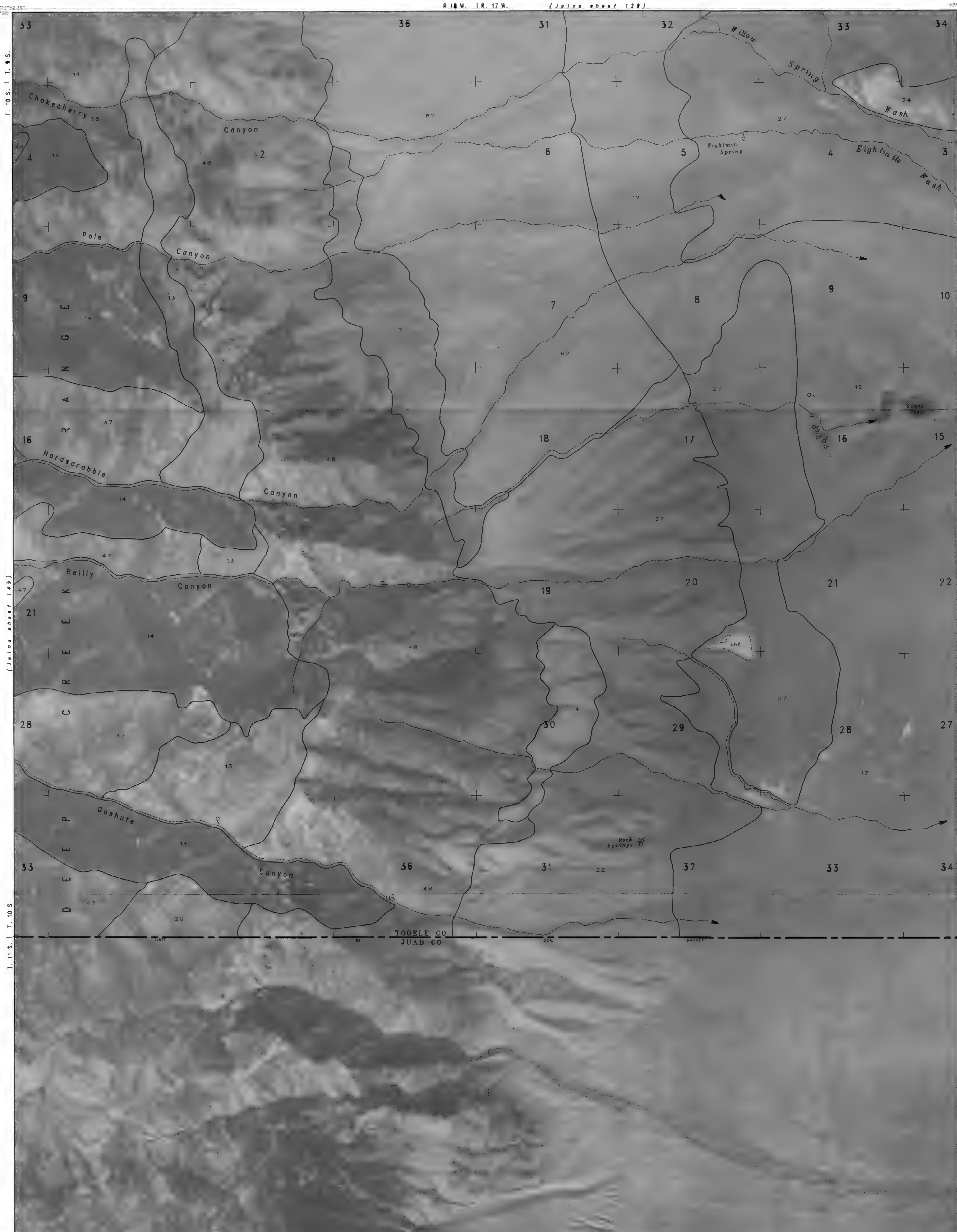
N

SHEET NO. 145 OF 164

Q1903 - Goshute

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 146
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 146

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

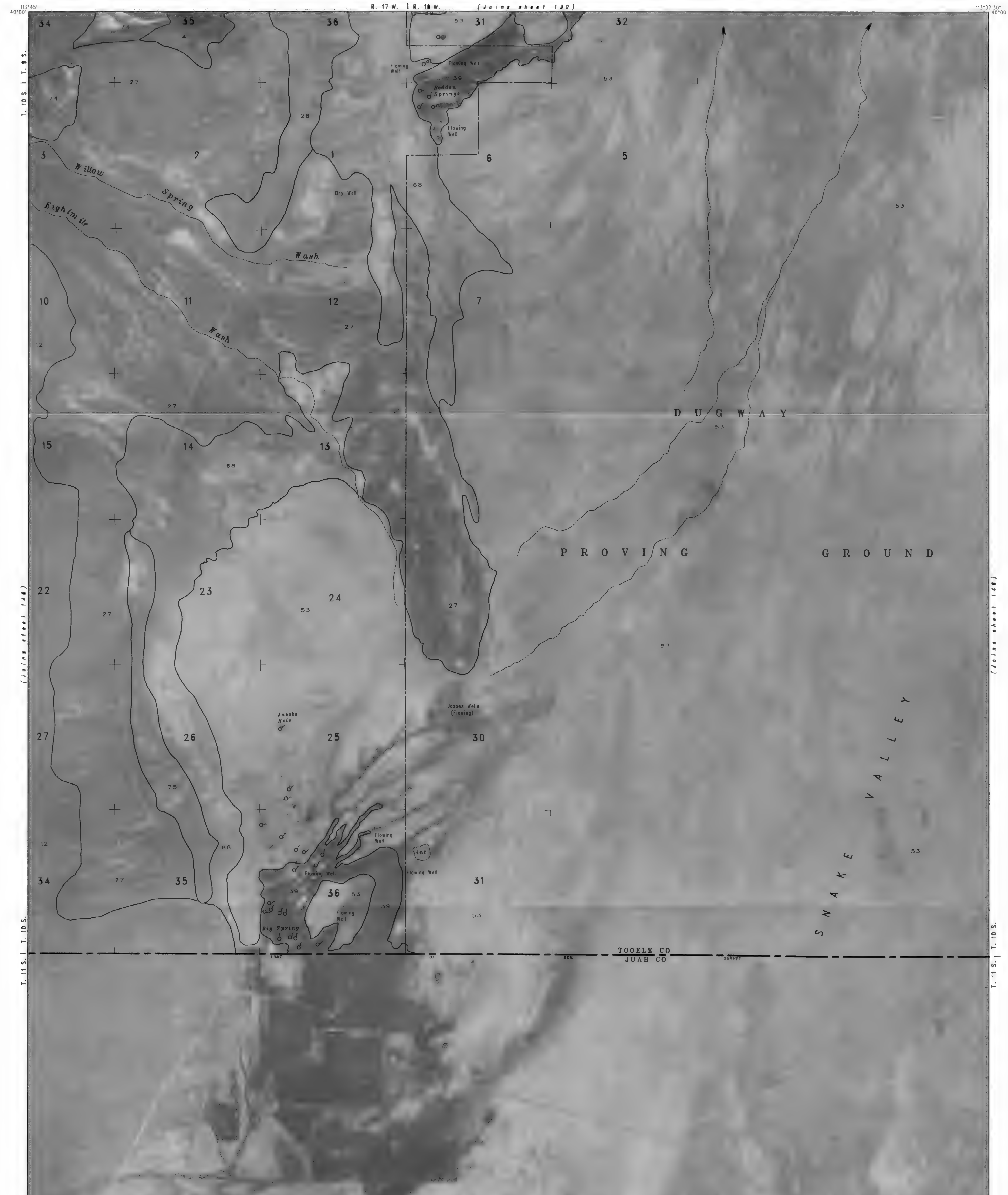
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

SHEET NO. 146 OF 164
Q1904 – Goshute Canyon

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 147
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



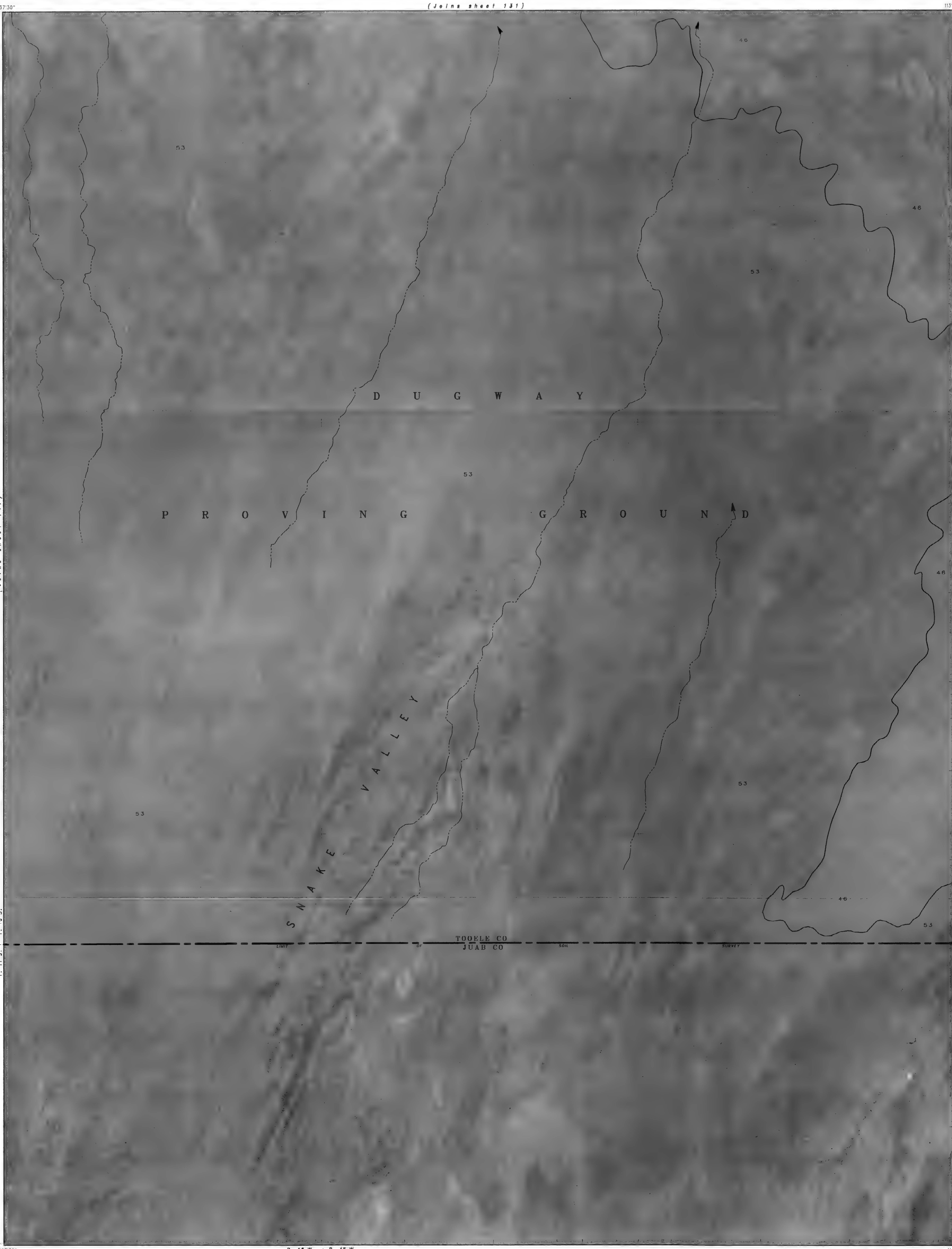
TOOELE AREA, UTAH AND NEVADA NO. 147

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

SHEET NO. 147 OF 164
Q1905 – Callao

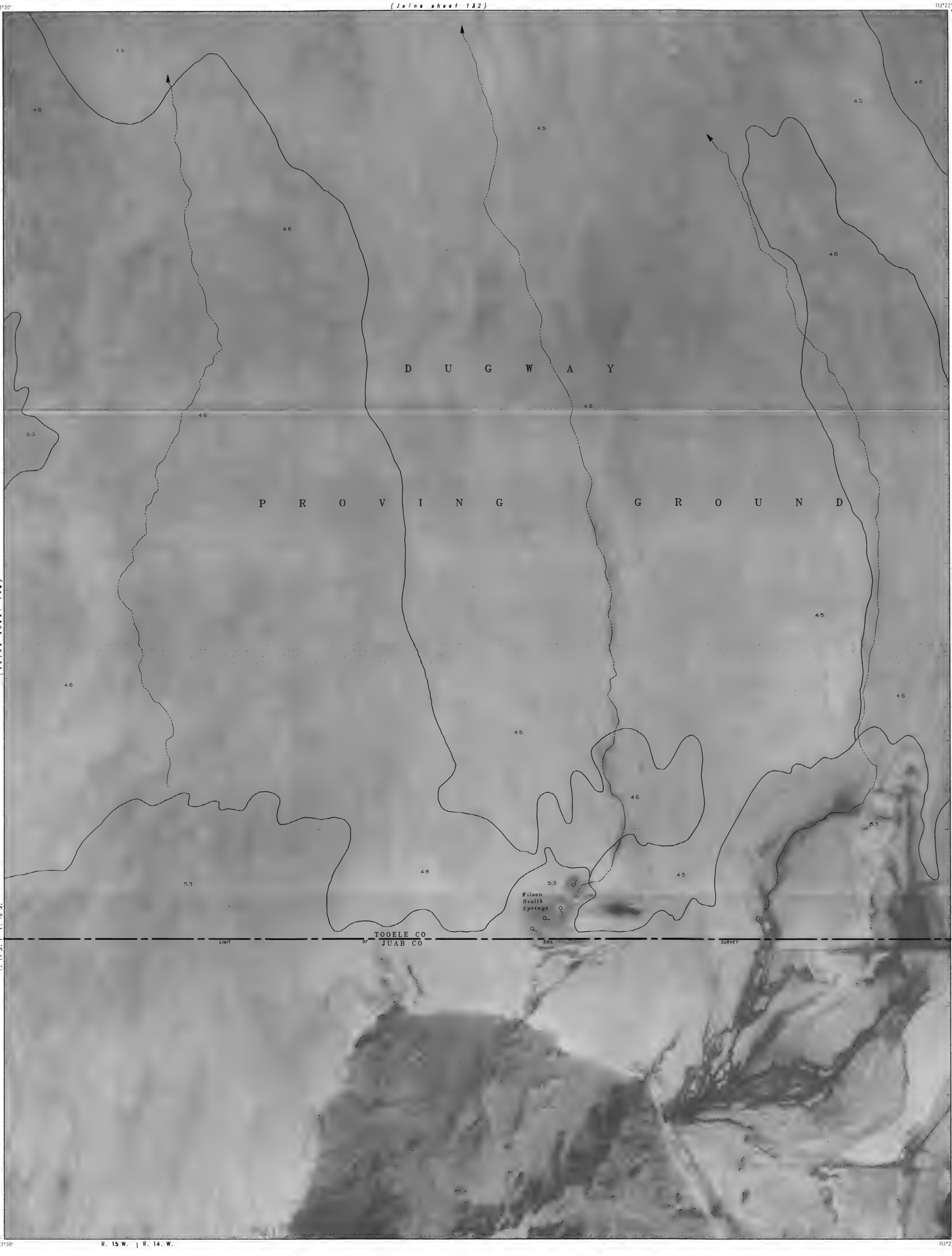


TOOELE AREA, UTAH AND NEVADA NO. 148

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N



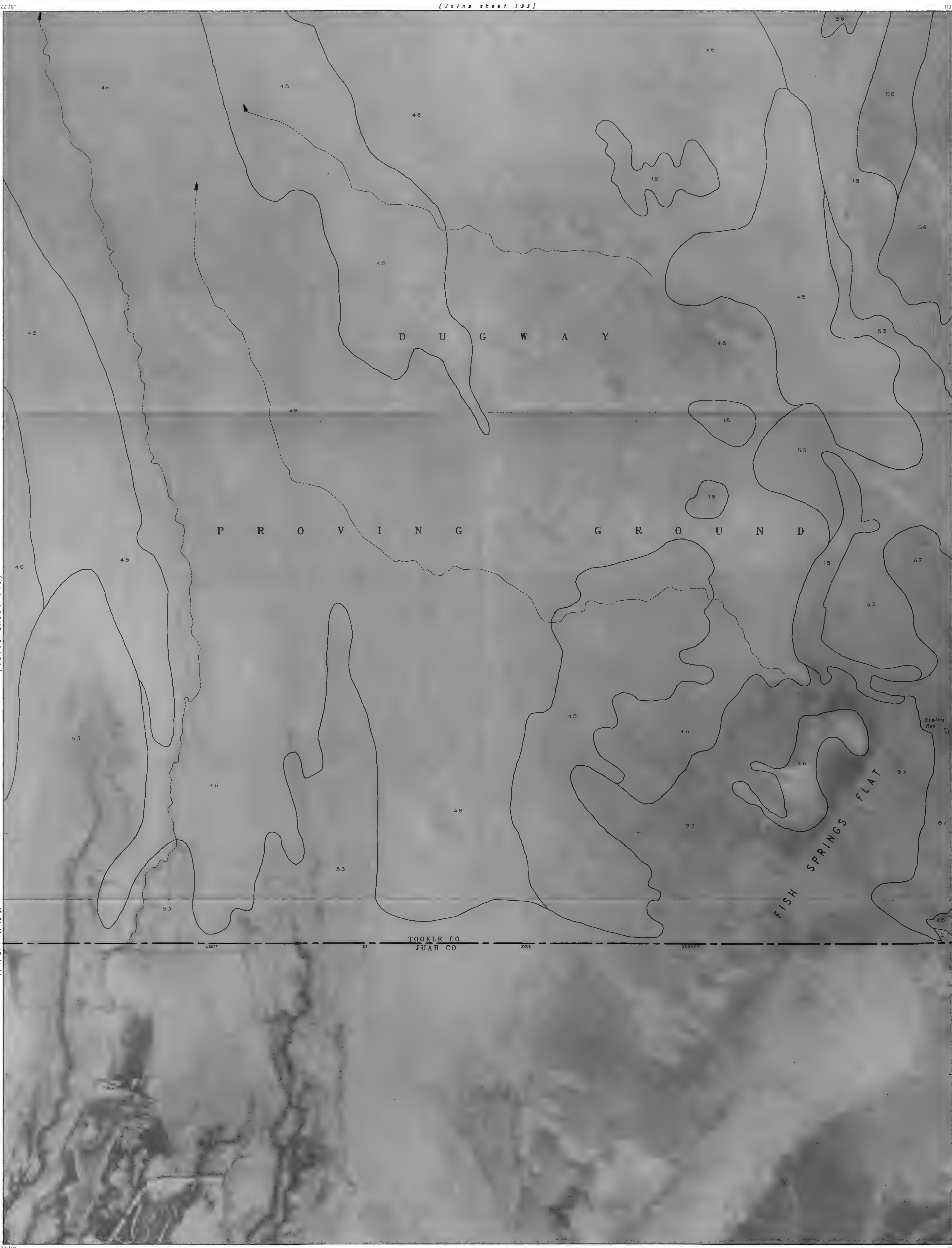
TOOELE AREA, UTAH AND NEVADA NO. 149

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q1907 – Fish Springs Nw



TOOELE AREA, UTAH AND NEVADA NO. 150

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 1/2 0 1 MILE

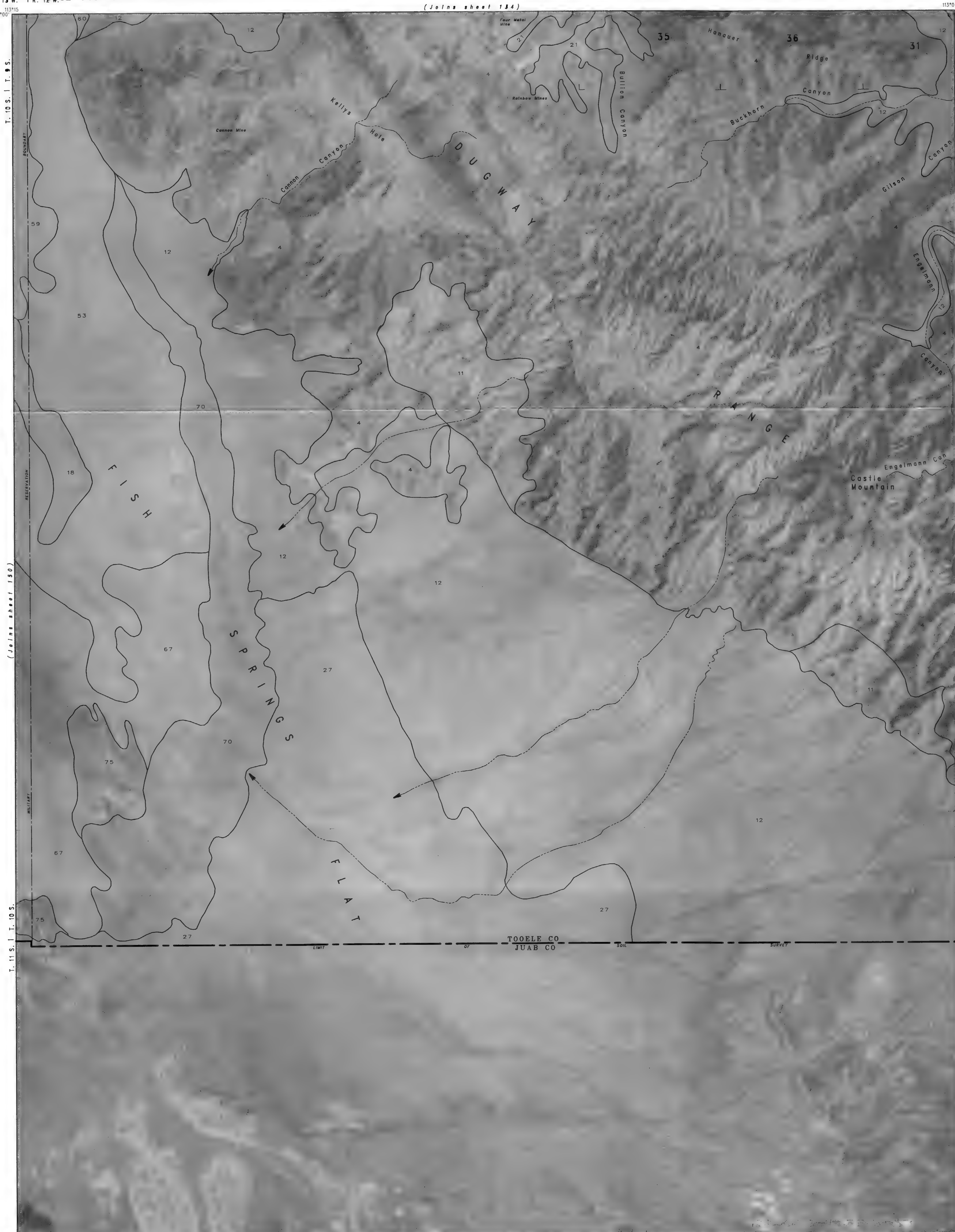
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

N

Q1908 – Fish Springs Ne



TOOELE AREA, UTAH AND NEVADA NO. 151

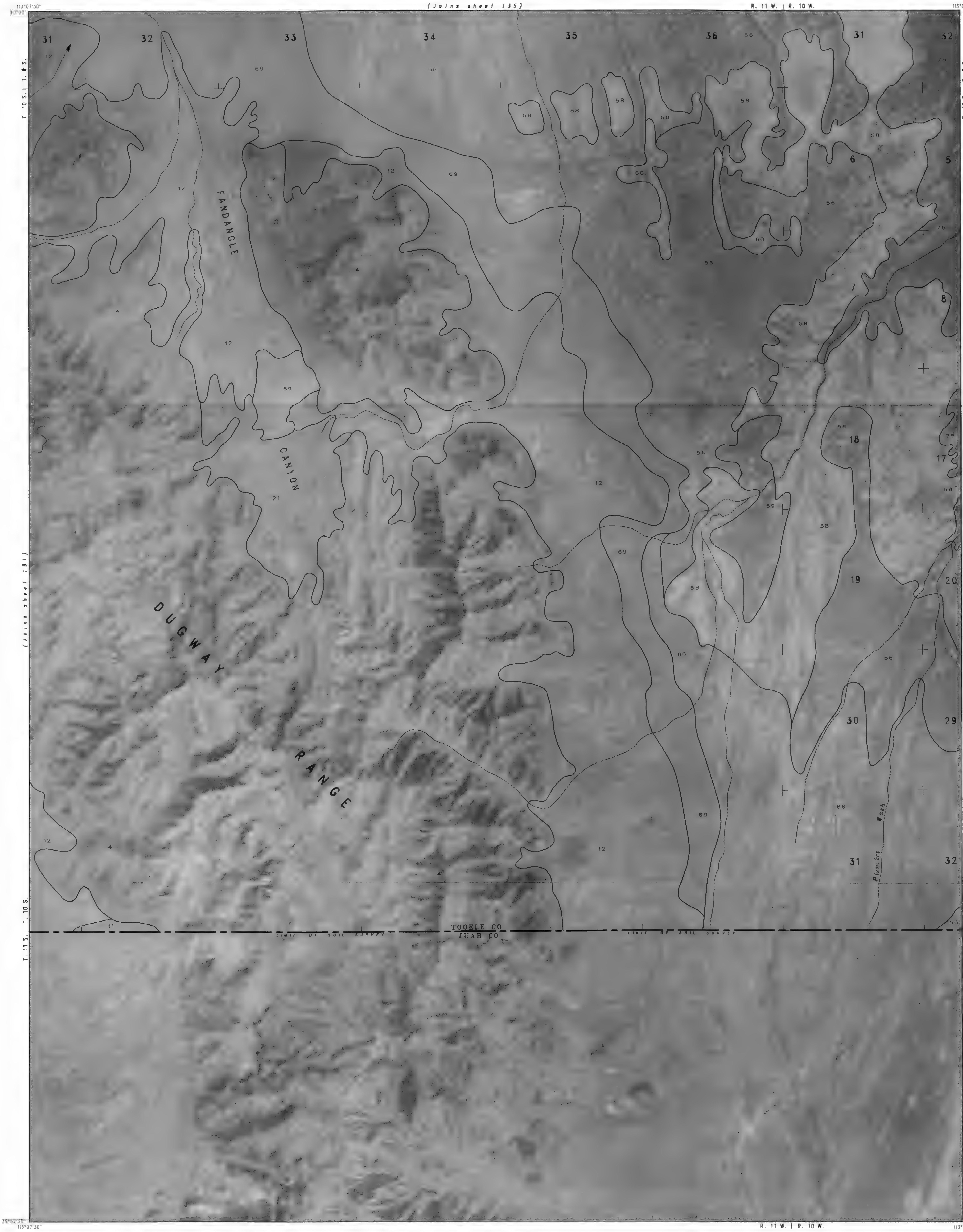
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 152
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 152

1 MILE 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

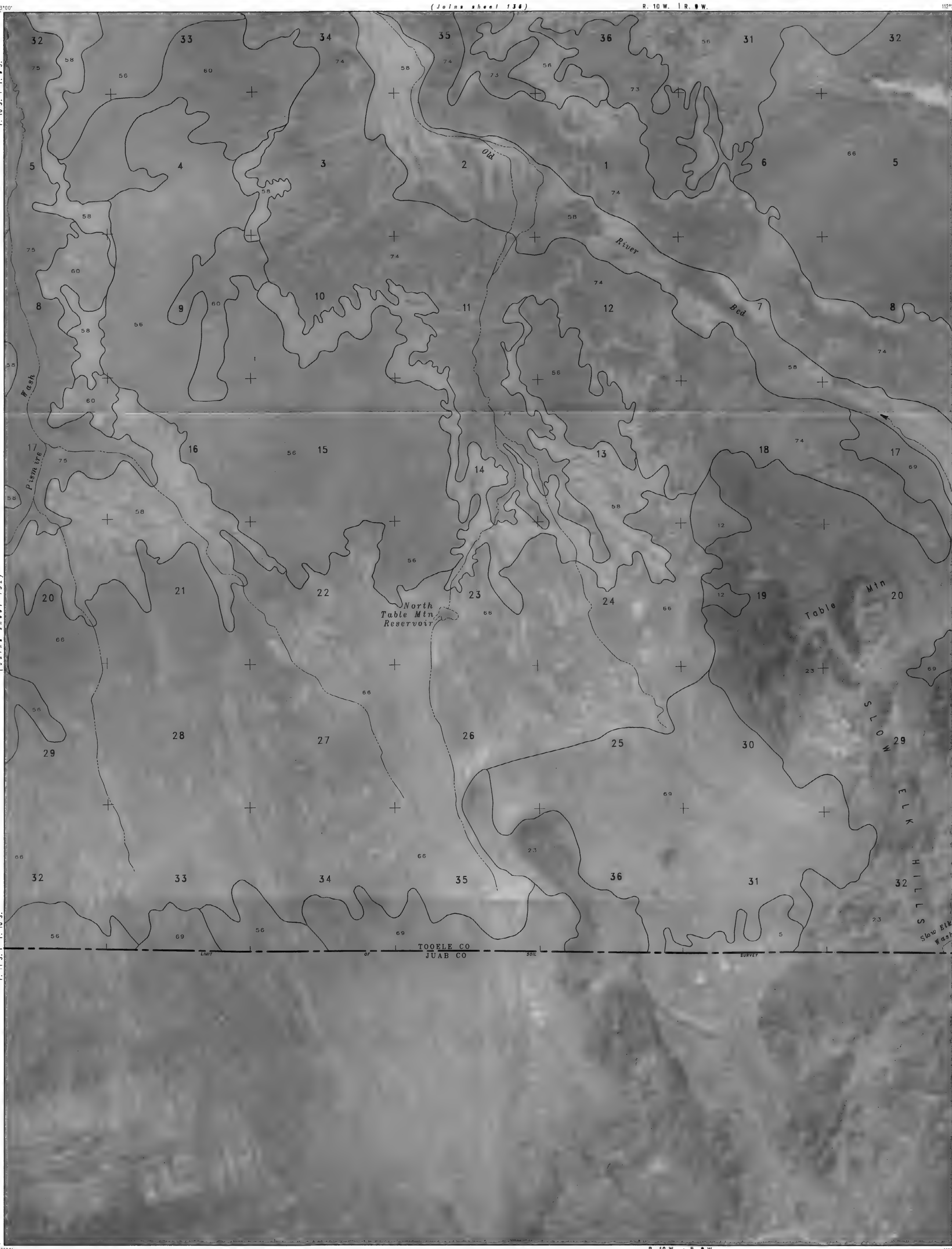
N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 152 OF 164
Q1910 - Dugway Range Ne

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 153
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 153

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 153 OF 164
Q1911 - Table Mtn

TOOELE AREA, UTAH AND NEVADA NO. 154

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

1 MILE — 1/2 — 0 — 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

Q1912 - Coyote Springs

TOOELE AREA, UTAH AND NEVADA NO. 155

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 155 OF 164
Q1913 - Indian Springs

TOOELE AREA, UTAH AND NEVADA NO. 156

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

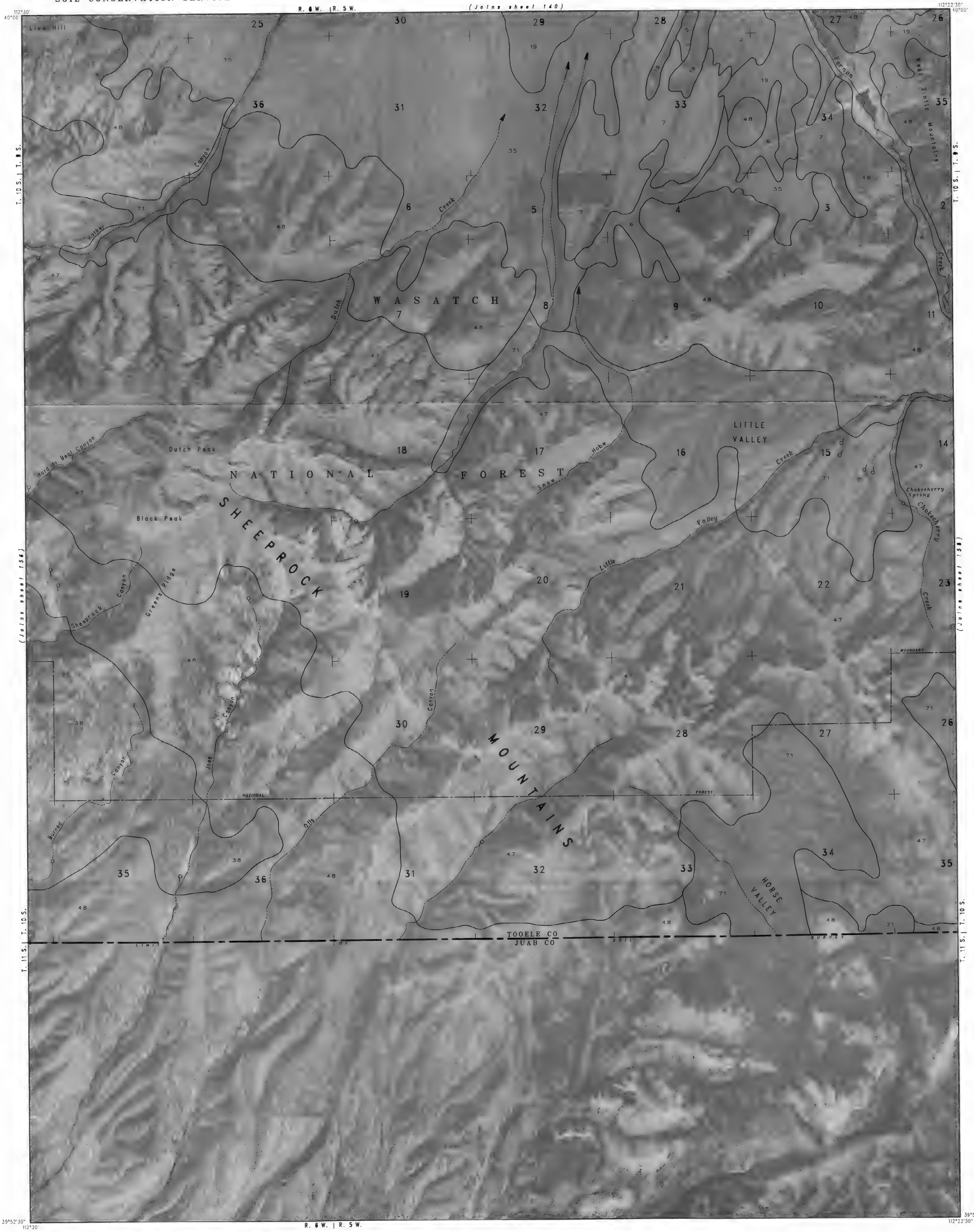
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

SHEET NO. 156 OF 164
Q1914 - Erickson Knoll

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 157
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 157

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 157 OF 164
Q1915 - Dutch Peak

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 158
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 158

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 158 OF 164
Q1916 – Sabie Mtn

TOOELE AREA, UTAH AND NEVADA NO. 159

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

Scale 1:24,000

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

N

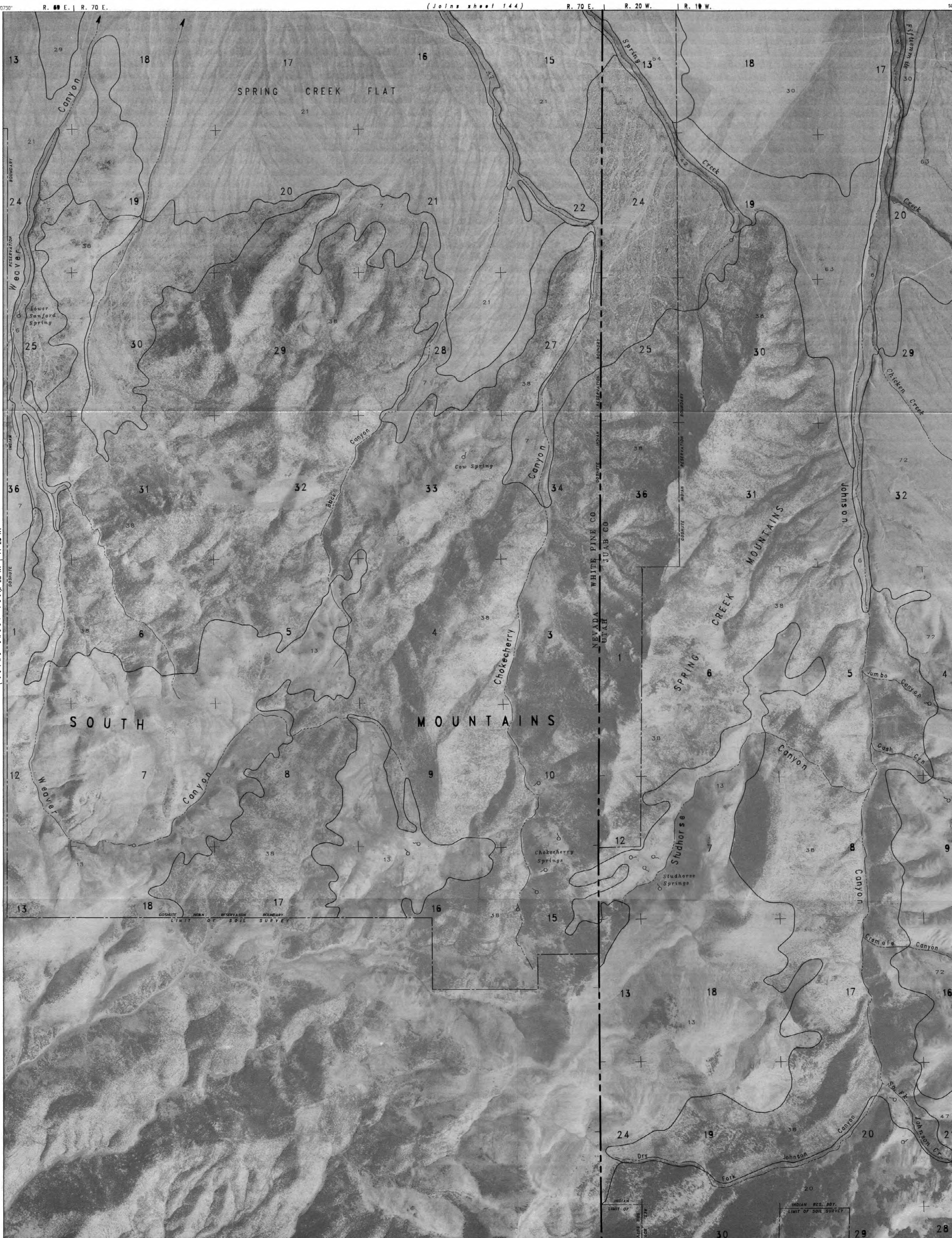
Q1917 – Tintic Junction

TOOELE AREA, UTAH AND NEVADA NO. 160

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



TOOELE AREA, UTAH AND NEVADA NO. 161

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

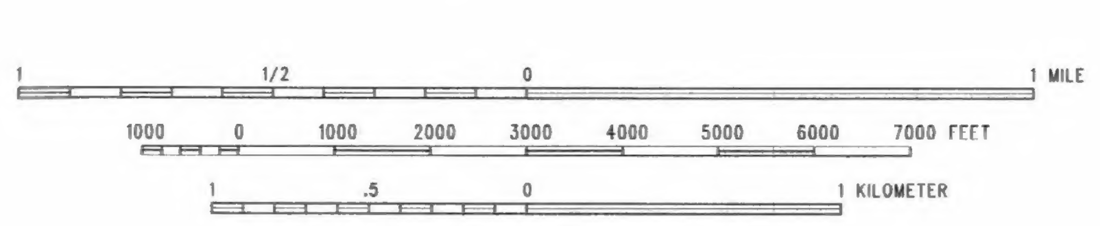
SHEET NO. 161 OF 164

Q2002 - Weaver Canyon

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 162
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA

TOOELE AREA, UTAH AND NEVADA NO. 162



Scale 1:24,000

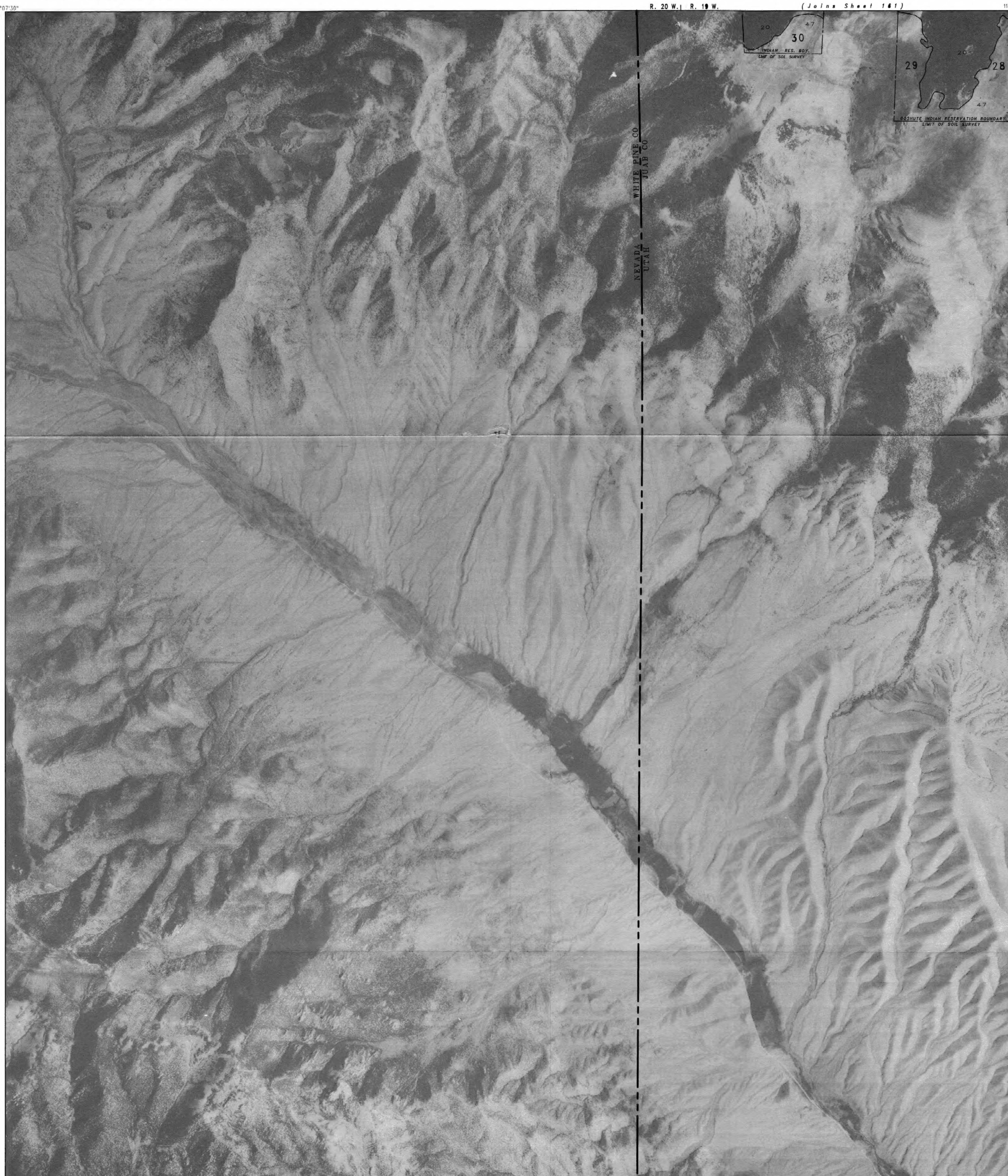
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 162 OF 164

Q2003 - Ibapah Peak

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 163

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

Scale 1:24,000

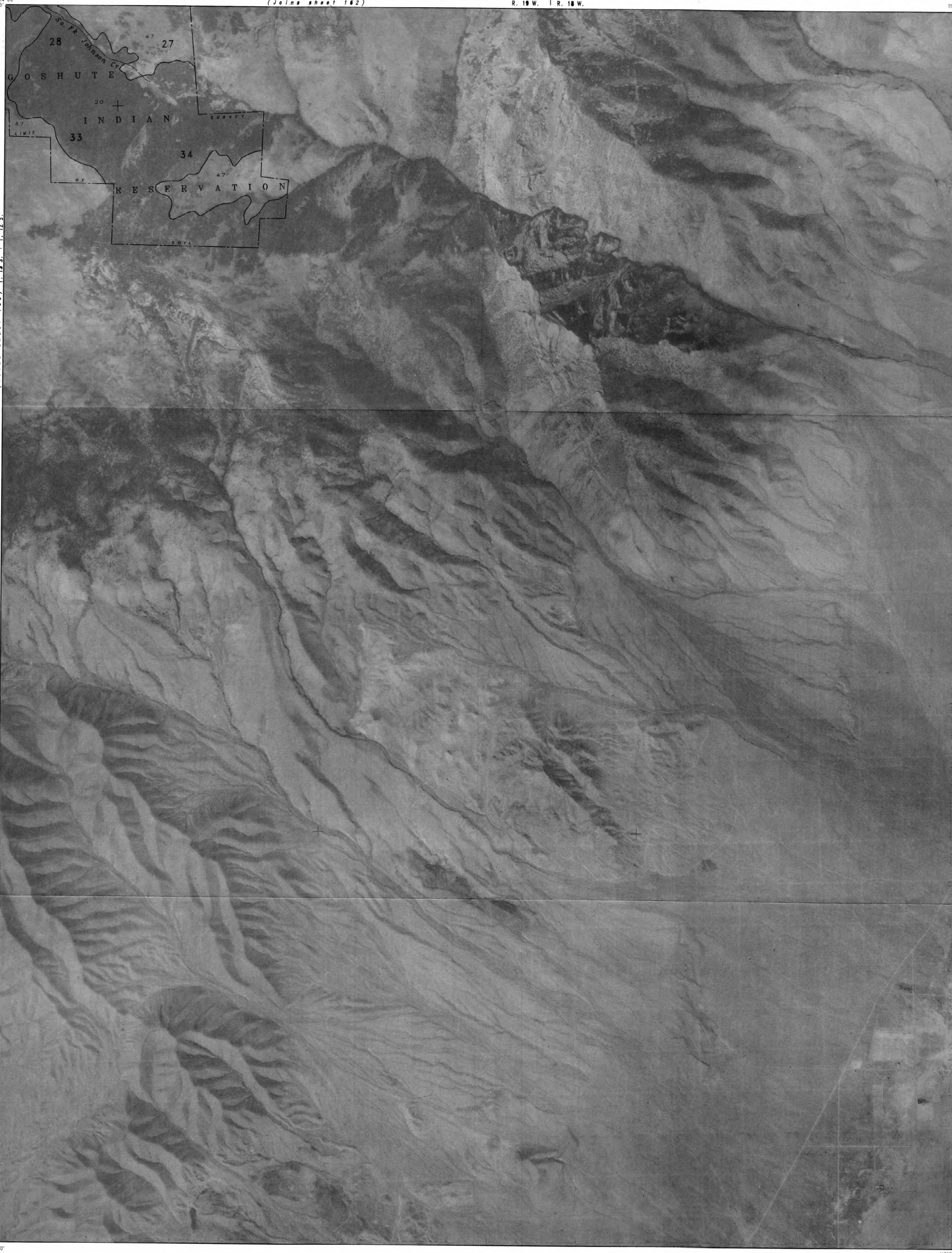
N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

Q2102 - Skinner Canyon

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 164
SOIL SURVEY OF TOOELE AREA, UTAH AND NEVADA



TOOELE AREA, UTAH AND NEVADA NO. 164

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER
Scale 1:24,000

N

This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and coorperating agencies. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1978 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SHEET NO. 164 OF 164

Q2103 - Partoun